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SIXTH
ANNUAL
REPORT
OF THE

PUBLIC
LIGHTING
COMMISSION

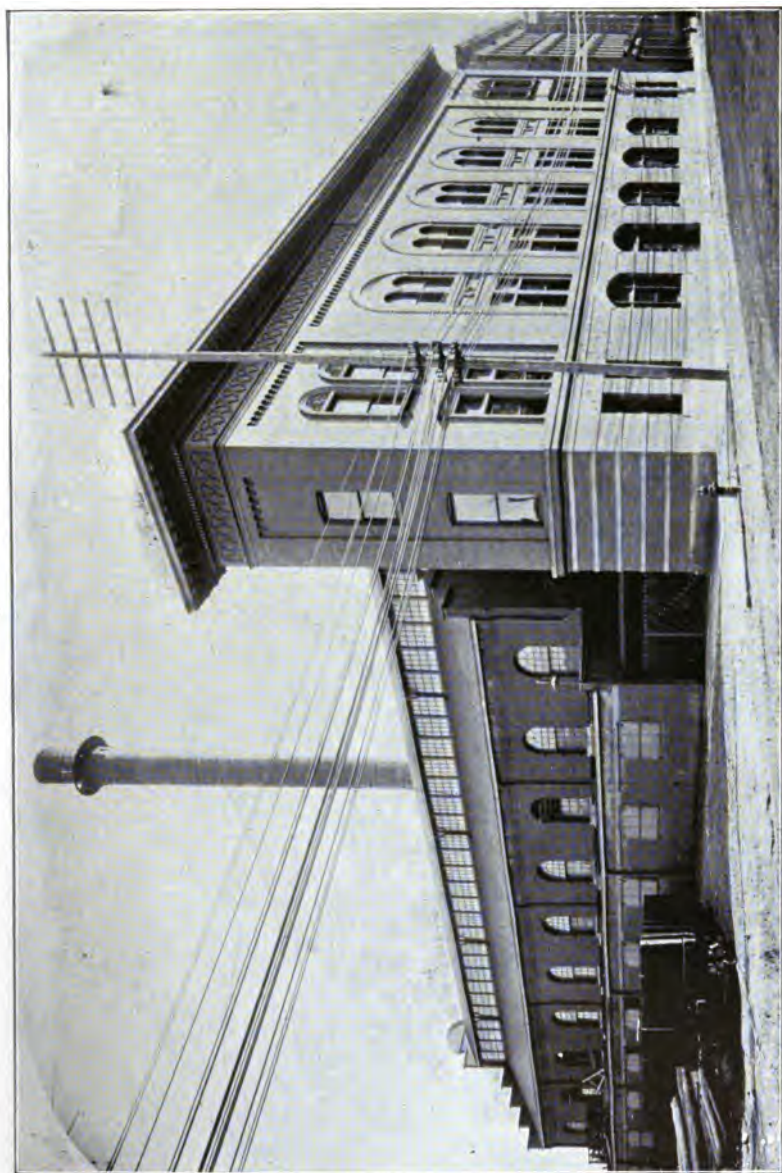


OF THE
CITY OF DETROIT
MICHIGAN



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OFFICE AND STATION BUILDINGS.



PUBLIC LIGHTING COMMISSIONERS,
1901.

SIXTH ANNUAL REPORT

OF THE

etroit. Public Lighting Commission

CITY OF DETROIT.

Fiscal Year Ending June 30, 1901.

THE COMMISSION.

DAVID W. SIMONS, President.....	Term expires April 4, 1905
E. H. McCURDY, Vice-President.....	Term expires April 4, 1902
JAMES E. DAVIS.....	Term expires April 4, 1903
FREDERICK F. INGRAM.....	Term expires April 4, 1904
JOHN ERHARD.....	Term expires April 4, 1906
HAMILTON CARHARTT.....	Term expires April 4, 1907
FRANK T. BOWLER.....	Secretary,
WILLIAM M. DALY.....	City Electrician and Gen'l Supt.
AUSTIN S. HATCH.....	Assistant Gen'l Supt.
Custodian of Funds.....	WM. B. THOMPSON, City Treasurer.
Auditor of Accounts.....	F. A. BLADES, City Controller.
City Accountant.....	FRANCIS J. DUCAT.

The Ex-Members of the Commission are:

C. A. NEWCOMB, April, 1893, to July, 1893.
MARTIN BUTZEL, April, 1893, to March, 1895.
GEORGE H. LOTHROP, April, 1893, to April, 1896.
W. A. JACKSON, April, 1893, to July, 1896.
EDWIN HENDERSON, April, 1896, to December, 1896.
W. R. FARRAND, April, 1893, to April, 1897.
J. L. HUDSON, April, 1893, to May, 1898.
JOHN ATKINSON, July, 1896, to July, 1898.
R. H. FYFE, July, 1893, to October, 1899.
C. H. RITTER, March, 1895, to January, 1900.
JOHN MINER, December, 1896, to January, 1900.
W. A. LIVINGSTONE, April, 1897, to January, 1900.



DETROIT, MICH., July 31, 1901.

TO THE HONORABLE THE COMMON COUNCIL,
City of Detroit, Michigan.

GENTLEMEN—The Public Lighting Commission respectfully submits for your consideration the accompanying report of the business intrusted to its care during the fiscal year ending June 30, 1901.

In the report an effort has been made to present such data as will best convey an understanding of the work done, the costs of municipal lighting and the condition of the city's investment.

We have the honor to be,

PUBLIC LIGHTING COMMISSION,

By DAVID W. SIMONS, President.

FRANK T. BOWLER, Secretary.

Office of the Public Lighting Commission.

Detroit, Mich., Oct. 1, 1901.

To the Hon. Public Lighting Commissioners:

Gentlemen:—

I submit the sixth annual report of the business and operation of the Public Lighting Plant, covering the fiscal year ending June 30, 1901, fully confident that additional demonstration has been made of the success of public lighting in Detroit. While it is true that there has been a slight increase in the cost of operation for the year; namely, 86 cents per arc light, gross cost, and \$2.29 per arc light cash cost, yet a careful comparison of this year's conditions with those that obtained in previous years will show that the efficiency and economy of administration have been substantially increased. It must be remembered that during the year just closed the cost of labor and of all classes of supplies have shown a marked increase. It is a striking fact that the increase in the cost of coal alone was \$1.69 per arc light, which item will, in itself, more than account for the increase in the gross cost per arc light. It must also be borne in mind that as the age of the plant increases the necessary cost of repairs and of replacing of parts, which is added to the cost of operation, must also increase. During a year therefore of unfavorable conditions for the manufacture of any commodity cheaply we must feel gratified that the Public Lighting Plant has been operated with but a nominal increase in cost.

The entire maintenance and operating cost for the last fiscal year was \$99,094.62 as compared with \$90,087.73 for the preceding year, showing an increase of \$9,006.89. The output of the plant, however, was 3,973,350 Kilowatt Hours as against 3,789,050 Kilowatt Hours last year, showing an increase in the output of 184,300 Kilowatt Hours.

The following table will show the ratio of increased expenditures among the different departments:

	Wages.		Stores.	
	Increase.	Decrease.	Increase.	Decrease.
Maintenance	\$1,214.02	\$	\$2,468.60	\$
Executive .....	....	481.46	132.53	....
Station	453.28	....	4,396.82	....
Lighting	1,732.21	....	....	651.24
Shop supplies .....	....	....	....	27.79
Injuries and damages.....	....	99.38	....	651.24
Totals	\$3,399.51	\$ 580.84	\$6,997.95	\$ 809.73
Total increase	\$10,397.46			
Total decrease	1,390.57			
Net increase	\$ 9,006.89			

While always keeping in mind that economy of operation is one of the main ends to be attained, yet the Commission has never been forgetful of other ends to be subserved by the Public Lighting Plant. No striving, therefore, after a reduction of operating expenses in the different departments has been permitted to impair the efficiency of the lighting service given to the city. The Commission has always been mindful also of the beauty of our city and it has always been its aim to interfere as little as possible with the sightliness of her streets, even when the closest economy might have countenanced a somewhat different policy, and it is unfortunate that in this regard the Commission has not met with the unqualified assistance and encouragement of other public boards.

The total output of the plant for the year was as follows:

For arc lighting.....	3,475,389	Kilowatt Hours.
For incandescent lighting.....	497,961	“ “
<hr/>		
Making a total of.....	3,973,350	“ “
Total for preceding year.....	3,789,050	“ “
Average number of 2,000 candle power arc lights.....	2,035	
Same for preceding year.....	1,963	

The Commission upon careful consideration have found no reason to change the method of arriving at the actual cost of an arc light per year to the city.

To the cash cost of operating the plant is added the fixed charges, as follows:

Depreciation on the entire investment of \$742,907.56, at 3%, June 30th, 1901.....	\$ 22,325.61
Interest on the net investment, July 1st, 1900, \$720,620.34, for one year at 4%.....	28,824.81
Lost taxes (the amount the city would get as taxes were the plant owned by a private corporation) are figured by charg- ing to the operation of the plant at the regular rate of taxa- tion for the city, county, and state. The probable assessed value, based upon a comparison with the assessed values of other plants of like character, similarly located in the city, is placed at \$351,885.00. This amount at \$18.07 per \$1,000 is.....	6,358.56
Cash cost of operation is.....	99,094.62
<hr/>	
Making a total cost of.....	\$156,603.60

Total cost proportioned between arc and incandescent plants accord-
ing to output of each is as follows:

Arc plant	\$136,977.22
Incandescent plant	19,626.38
<hr/>	
Total	\$156,603.60

Cost of operation per arc light (cost of operation divided by average number of lights, 2,035).....	\$67.3
Cost per arc light subdivided—	
Operating disbursements	\$42.59
Interest at 4% on investment.....	12.39
Depreciation at 3% on investment.....	9.60
Lost taxes on investment.....	2.73
Total	\$67.3
Gross cost per arc light, fiscal year ending June, 1900.....	66.1
Increase .....	.8
Cash cost per arc light, fiscal year ending June 30, 1901.....	\$42.3
Cash cost per arc light, fiscal year ending June 30, 1900.....	40.3
Increase	\$ 2.3

As has been shown in reports of previous years, the gross cost of operation to the Commission is by no means the measure of the cost of public lighting to the citizens of Detroit. Certain incomes accruing to the Commission go to reduce the actual cash cost of operation to the taxpayers while a saving of expenditure formerly made by other agencies of the city government and now saved by virtue of the existence of this Commission make a further reduction in cash cost.

These items may be summarized as follows:

Proportion of time of City Electrician and Assistant now saved by Commission, per annum.....	\$1,200.00
Collections from rentals.....	4,110.99
Total	\$5,310.99

Averaging this deduction from the cash cost reduces the cash cost per arc light from \$42.59 to \$40.31.

The income from the rental of conduits would be greatly increased and the cash cost of lighting correspondingly decreased were it possible to compel private companies to place their wires underground and to use the conduits of the Commission. In view of such use by private companies, the Commission has provided many more ducts than are at present used. The interest, depreciation, and lost taxes upon the surplus conduit investment deducted from the fixed charges would further reduce the gross cost of operation.

The Commission during the last fiscal year was confronted with the necessity of providing for an increased output. July 1, 1900, found the Commission with a demand for 600 new lamp locations, an overload of 10% on 19 arc machines in order to hold one set of four in reserve, and an incandescent service with a 10% overload and no reserve. The floor

space of the station was already filled, so to meet this demand the problem resolved itself into installing a system of direct connected units or enlarging the station. The former involved a complete change of station equipment, the latter meant the installing of the same or a different method of equipment for the extensions. After carefully weighing the cost of construction and operation, and inspecting the methods being adopted by the best plants, both private and municipal, it was decided to install the series, enclosed, alternating arc system.

There were installed during the year:

One Triple-Expansion Marine Type Engine, cylinders 17 in. by 27 in. diameter and 30-in. stroke, 120 revolutions per minute, 160 pounds steam pressure, 1,000 Horse Power Maximum, at 26 in. vacuum, and direct connected to a 600 Kilowatt 2 phase Stanley Alternator, at 2,200 volts each phase.

One 175 Kilowatt Stanley 2 phase Alternator, 2,200 volts, at 500 revolutions per minute.

One 40 Kilowatt Northern Electric 125 volt direct current Dynamo, at 325 revolutions per minute, to be direct connected to Westinghouse engine and used as an exciter.

Realizing that the Commission was established to do all the city lighting, the necessity of furnishing light and power to the new County Buildings and to school, fire and police buildings was also taken into consideration, so the method of sub-station distribution was adopted and an appropriation was made by the Board of Estimates to enable the first station to be built. This sub-station will be equipped during the coming year and will supply 300 arc, 1,000 incandescent and 13 horse power in motors. Another item taken into consideration was the item of maintenance. While the repairs were kept up year by year, there was a constant deterioration which could not be replaced each year such as rusting of iron, rotting of poles, rebuilding of lines caused by the growth of trees, and the painting of buildings; this being designated as maintenance. Much of this work was done during the past year preparatory to the new installation. There was spent for this purpose a total of over \$8,000.00. From all this it will be readily understood why the plant did not show its usual decrease in the cost of operation.

Public lighting may be deemed no longer an experiment in the City of Detroit. Its success has been demonstrated. But while the experience of the last six years leads to the conclusion that municipal lighting can be done efficiently and at a saving to the taxpayers, it has also demonstrated that such results can be obtained only by the most rigid and careful economy, the application of the highest order of business method, and a complete alienation of those influences which often hamper and harass the operations of public boards. It must be remembered that the work of this Commission in one important respect differs from that of other public boards. This Commission is not alone performing certain public functions

as are other departments of the city government, but it is manufacturing a commodity which has a definite and measurable market value and quality, and which can be readily compared with that produced by private companies. It therefore behooves this Commission to be continually alert lest its efficiency and independence of conduct be hindered by circumstances to which private manufacturers are not a prey. That the Commission has for the most part been free from such influences its success is indicative, but a word of warning is always opportune and may keep us from lulling ourselves into too great a feeling of security. So long as we apply the same business principles as have been in the main applied in the past, so long will municipal lighting be successful and demonstrate the wisdom of the taxpayers who established it.

Yours respectfully,

DAVID W. SIMONS,

President.



SIX LIGHT TOWER ON CAMPUS MARTIUS.



MAST ARM.

The City's Lighting Plant.

The property owned and controlled by the Public Lighting Commission now consists of the following:

The power house and office building located on Atwater street, between Bates and Randolph, having a frontage on Atwater street of 213 feet, 163 feet of which extends back an average of 318 feet 6 inches to the river front and 50 feet of which on the east extends back only a distance of an average of 68 feet. (The complete plan of the station will be found on page 26.)

The boiler house contains seven Double Deck Tubular Boilers, C. C. Peck design. Each boiler has 3,000 square feet of heating surface and is equipped with the Hawley Down Draft Furnace and Hoppes Live Steam Purifier and Worthington Water Meter. Five of these boilers are used at one time to operate the plant, the other two being kept in reserve. A change is made every six weeks, and each boiler as it is put out of commission is given a complete overhauling and cleaning in one-ton charging cars on a "Hunt" industrial railway. The coal is handled floor and have a capacity of 800 tons. A sidetrack built by the Commission in Atwater street, and connected with the railway tracks at Riopelle, allows cars of coal to be pushed in alongside and unloaded directly into the coal bins. The Commission has contracted for is paid for

on a complete overhauling and cleaning in one-ton charging cars on a "Hunt" industrial railway. The coal is handled floor and have a capacity of 800 tons. A sidetrack built by the Commission in Atwater street, and connected with the railway tracks at Riopelle, allows cars of coal to be pushed in alongside and unloaded directly into the coal bins. The Commission has contracted for is paid for



REAR OF POWER HOUSE.

The Pump Room contains: One Fire Pump of 1,000 gallons per minute capacity. This pump is connected to a complete system of fire mains and is always under steam. It is used during the day to feed the boilers and to operate a water motor which runs the machine shop.

One Worthington Pressure Pattern Feed Pump, in reserve, of 100 gallons per minute capacity. This is connected to a duplicate boiler feed system.

Two Worthington Jet Condensers, with feed pumps attached. Either condenser will condense 36,000 pounds of steam per hour, and the auxiliary feed pump can feed the same amount of water to the boiler. All of the water used in the operation of the plant is pumped by the above machinery from the Detroit river.



PUMP ROOM.

One Wainwright Heater, which utilizes the exhaust steam from the pumps and small engines in heating the boiler feed water.

One Westinghouse Air Compressor, which supplies the compressed air for cleaning machinery.

The Engine Room contains the following:

ARC LIGHTING PLANT:

Five triple expansion, marine type engines; 200 revolutions per minute; 160 pounds steam pressure; 25-inch vacuum; cylinders, $11\frac{1}{4}$ -inch, 18 inches and 29 inches in diameter, and 18-inch stroke; horse power at maximum efficiency is 340.

Twenty 50-kilowatt, four-pole Western Electric Co. Arc Dynamos for constant current at 9.6 amperes; speed, 500 revolutions per minute. Four dynamos are driven by each engine, the connection being $7\frac{1}{8}$ -inch cotton ropes to each dynamo.

Three $57\frac{1}{2}$ -kilowatt, two-pole Western Electric Co. Arc Dynamos for constant current at 9.6 amperes; speed, 465 revolutions per minute. Each dynamo is direct connected to a 100 horsepower, triple expansion Willans center-valve engine.

One 7-kilowatt, two-pole Brush Arc Dynamo; 1,080 revolutions; $6\frac{1}{2}$ amperes; belt connected to same Westinghouse Compound En-



DOWN-TOWN POST.

ine as operates one Westinghouse alternator. This machine furnishes current for a small circuit of enclosed arc lamps.

INCANDESCENT LIGHTING PLANT:

Three Compound Westinghouse engines, run non-condensing; cylinders, 14-inch and 15-inch, with 9-inch stroke; speed, 350 revolutions per minute.

Three 55-kilowatt two-phase Westinghouse Alternators, belt driven. Alternators are run in parallel; 1,100 volts primary, 110 volts secondary.

Two exciters, one belt-driven and one direct-connected to a Westinghouse standard Engine.

One Triple-Expansion Marine type Engine, cylinders 17x27x46 inches diameter and 30-inch stroke, 120 revolutions per minute, 160 pounds steam pressure, 1,000 horse-power maximum, at 26-inch vacuum, and direct connected



DOUBLE POST—UNDERGROUND DISTRICT.

to a 600-kilowatt two-phase Stanley Alternator, at 2,200 volts each phase.

One 175-kilowatt Stanley two-phase Alternator, 2,200 volts at 500 revolutions per minute.

One 40-kilowatt Northern Electric 125-volt direct current dynamo, at 325 revolutions per minute, to be direct connected to Westinghouse engine, and used as an exciter.

ARC LAMPS:

The 2,055 arc lamps in use are subdivided as follows:

- 1,812 "Brush" double carbon.
- 220 "Adams-Bagnall" single carbon.
- 5 "Adams-Bagnall" enclosed arc.
- 1 "General Electric" enclosed arc.
- 1 "Western Electric" enclosed arc.
- 10 "Western Electric" enclosed arc, alt. current.
- 6 "General Electric" enclosed arc, alt. current.

2,055



CENTER SUSPENSION.

POLES AND LINES:

The overhead lines of the plant are strung on a total of 7,110 poles owned as per the following table. On these poles the Commission has strung a total of 424 miles of copper wire.

Number of poles used by Public Lighting Commission and owned as follows:

	Increase.	Annual Report 1901.	Annual Report 1900.	Decrease.
Public Lighting Commission.....	112	5,864	5,752	..
Fire Commission	37	581	544	..
Police Commission .....	..	459	459	..
Edison Illuminating Co.....	..	66	77	11
Michigan Telephone Co.....	51	126	75	..
Street railways .....	..	14	35	21
	<u>200</u>	<u>7,110</u>	<u>6,942</u>	<u>32</u>

Net increase, 200—32=168.

The poles of the Public Lighting Commission are used by other parties as follows:

	Increase.	Annual Report 1901.	Annual Report 1900.	Decrease.
Fire Commission	491	1,382	891	..
Police Commission .....	..	873	873	..
Edison Illuminating Co.....	82	1,399	1,317	..
Michigan Telephone Co.....	920	1,894	974	..
East Side Electric Company.....	8	86	78	..
Detroit Still Alarm Co.....	..	169	242	73
Street railways .....	..	523	523	..
Detroit Shipbuilding Co.....	1	1	....	..
Parke, Davis & Co.....	..	1	1	..
Western Union Telegraph Co.....	1	1	....	..
Strube Bros.....	..	....	9	9
	<u>1,503</u>	<u>6,329</u>	<u>4,908</u>	<u>82</u>

Net increase, 1,503—82=1,421.

THE UNDERGROUND SERVICE—CONDUITS:

The conduits vary in size from 2 ducts to 24 ducts. The ducts are a special $3\frac{1}{2}$ -inch vitrified clay tile laid in concrete.

The total amount of conduits is as follows:

Size of Line.	Length of Line.	Lineal ft. of single ducts.
2 ducts	210 ft. 2 in.	420 ft. 4 in.
4 ducts.....	6,451 ft. 5 in.	25,805 ft. 8 in.
6 ducts	2,371 ft. 7 in.	14,229 ft. 6 in.
9 ducts.....	21,340 ft. 9 in.	192,066 ft. 9 in.
10 ducts	138 ft. 1 in.	1,380 ft. 10 in.
12 ducts.....	95 ft. 0 in.	1,140 ft. 0 in.
15 ducts	560 ft. 10 in.	8,412 ft. 6 in.
16 ducts.....	2,104 ft. 8 in.	33,674 ft. 8 in.
24 ducts	347 ft. 2 in.	8,332 ft. 0 in.
Tunnel, 6 ft. 2 in. x 3 ft. 6 in.....	231 ft. 0 in.	
Tunnel, 5 ft. x 3 ft.....	96 ft. 0 in.	
Manholes, 155.....	887 ft. 7 in.	
Totals	34,834 ft. 3 in.	285,462 ft. 3 in.

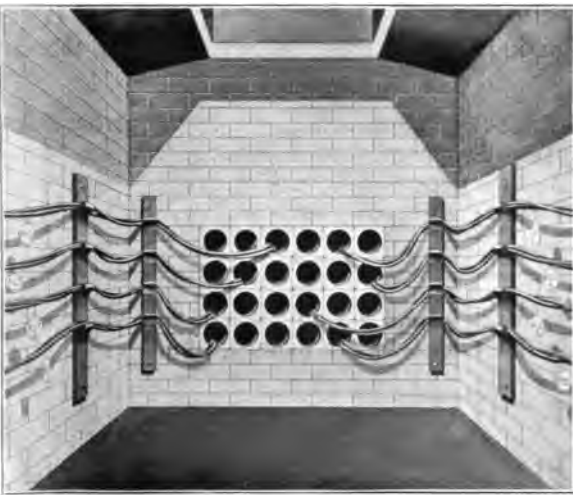
LATERAL CONDUITS:

Consisting of $2\frac{1}{2}$ in. lap welded iron pipe.....	44,549 ft.
349 Handholes, 3 feet in length.....	1,047 ft.

Total 45,596 ft.

Of the above conduits in the streets of the city, the Commission has rented the following:

Edison Illuminating Co..... 7,514 duct feet.



UNDERGROUND MANHOLE.

The rates charged for rental of conduits are as follows:

For single duct, 5c per foot per annum.

For two ducts paralleling each other, 9c for the two ducts per foot per annum.

For three ducts paralleling each other, 12c for the three ducts per foot per annum.

All such rentals are subject to the Rules and Regulations adopted by the Commission May 25th, 1897.



TUNNEL, UNDER WOODWARD AVENUE,
AT CAMPUS MARTIUS.

In the conduits the following lead covered, rubber insulated cables are used as conductors:

Arc lighting circuits, No. 4, B. & S. gauge.....	216,336 ft.
Incandescent feeders, No. 4, B. & S. gauge.....	36,576 ft.
Incandescent mains, No. 8, B. & S. gauge.....	29,746 ft.
Incandescent feeder, No. 0, B. & S. gauge.....	3,000 ft.

Total	285,658 ft.
-------------	-------------

All of the wires of the lighting system within the half-mile circle and a great portion of them inside the mile circle are under ground.

BELLE ISLE PARK :



POST—BELLE ISLE PARK.

Belle Isle, the principal city park, an island 700 acres in extent, located at the head of Detroit River and opposite the eastern end of the city, is lighted by the Commission entirely. All the wires are underground, 52,000 feet of $3\frac{1}{2}$ -inch wood conduit having been laid for this purpose, nearly one-half of which is still available for pulling in of cables. The bridge to the Island and the more important points on the main roadways are lighted by arc lamps, supported on ornamental iron posts. Fifty-one arc lamps are used and they are operated until 12 midnight as a part of the regular city circuits. Twenty-five thousand feet of No. 4 B. & S. gauge lead covered cable is used for this service.

The buildings in the west end of the park are lighted by incandescent lights, the current for which is obtained from mains connected with the central transformer station, where pairs of transformers receive three-phase alternating current at 3,500 volts and

deliver two-phase alternating current at 116 volts. The crossing of

the Detroit River with the three-phase feeder and the connection of the transformer station is accomplished by the use of 14,500 feet to No. 6 B. & S. gauge three-conductor, lead covered and rubber insulated cable, a part of which is armored with iron wire and placed under the river. The secondary mains connecting the several buildings with the transformer house are made up of 5,800 feet of No. 00 two-conductor and 1,100 feet of No. 1 two-conductor rubber insulated and lead covered cable and 3,000 feet of No. 4 single conductor cable.

The lighting in Water Works Park is done by 14 arc lights. The entire system is underground and was installed by the Water Commission at its own expense, this Commission furnishing the current for operation only.



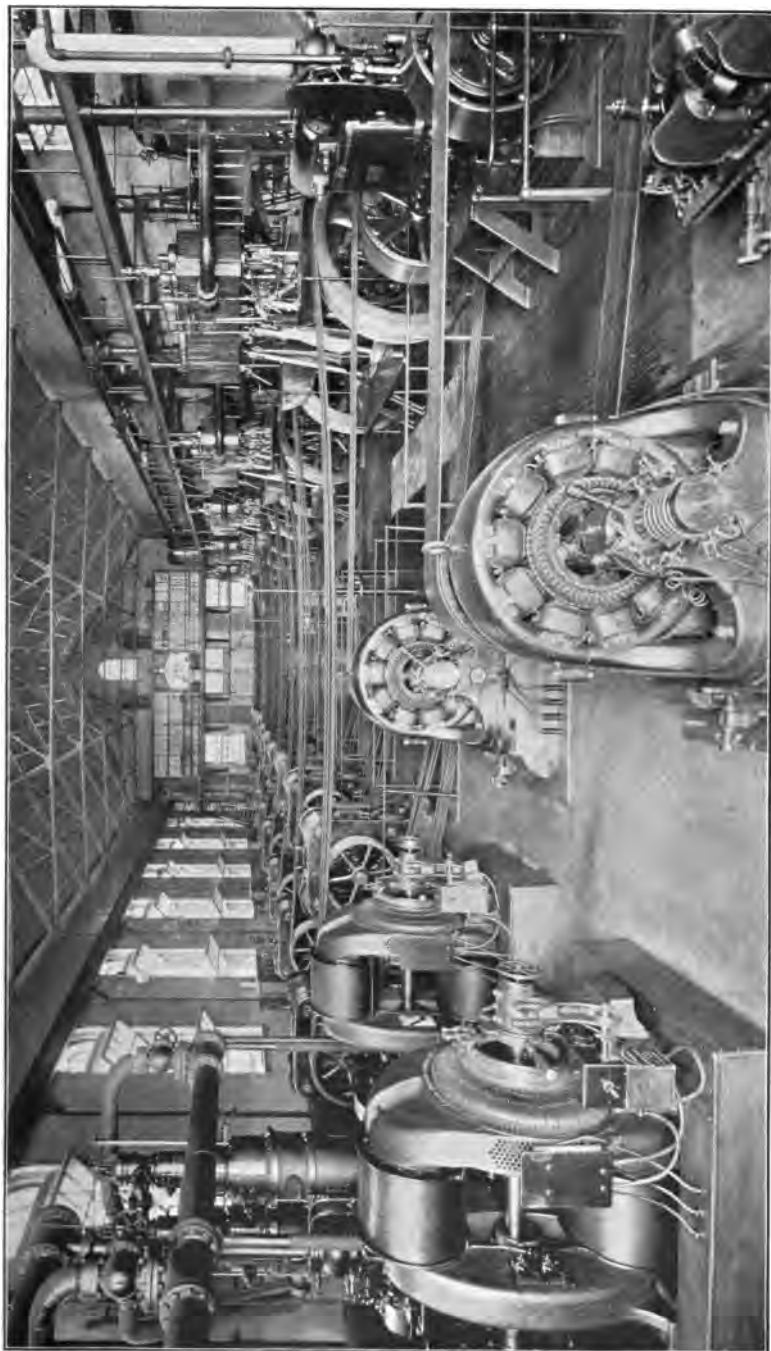
The tower system used by the city in connection with the street lighting is a unique feature. These lights may be seen many miles away by the traveler approaching. The 137 towers in use may be classified as follows:

2	165 feet in height.
1	160 feet in height.
124	150 feet in height.
2	125 feet in height.
8	100 feet in height.

Total. .137



CRANE FIXTURE.



GENERATOR ROOM.

Cost of The City Lighting Plant.

The city's investment proportioned between the incandescent and arc lighting on the basis of the electrical output is as follows:

	Arc.	Incandescent.	Total.
*Conduits	\$ 83,557.44	\$ 8,825.99	\$ 92,383.43
Cables	49,609.84	5,760.31	55,370.15
Buildings and wharf.....	99,894.02	10,310.94	110,204.96
Real estate	57,222.81	5,902.19	63,125.00
Machine shop	7,263.88	750.28	8,014.16
Lines and poles.....	130,815.93	13,817.14	144,633.07
Towers and lamp posts.....	97,755.04	.....	97,755.04
Steam plant	102,051.55	10,579.37	112,630.92
Electric plant, arc.....	60,949.12	.....	60,949.12
Electric plant, incandescent.....	.....	13,631.84	13,631.84
Railway tracks and scales	9,955.43	1,026.88	10,982.31
Arc lamps	55,678.62	.....	55,678.62
Totals	\$754,753.68	\$70,604.94	\$825,358.62
Belle Isle, lines, cables, lamps, etc.....	.....	.....	26,296.21
Grand total .....	.....	.....	\$851,654.83

*About one-quarter of these are occupied.

Cost Reduced to a Lamp Basis.

Reducing the above investment, exclusive of the Belle Isle, to the amount per lamp on the basis of the electrical capacity of the plant, viz.: 2,375 arc of 2,000 candle power, and 3,500 incandescent of 16 candle power, and we have the following:

	Arc.	Incandescent.
Conduits occupied	\$ 8.80	\$.63
Cables	20.89	1.65
Real estate	24.09	1.69
Buildings and wharf.....	42.06	2.95
Lines and poles.....	55.08	3.95
Towers and lamp posts.....	41.16	....
Arc plant	25.66	....
Incandescent plant .....	.....	3.89
Steam plant	42.97	3.02
Railway track and scales.....	4.17	.29
Machine shop	3.10	.21
Arc lamps and switches.....	23.44	....
Totals	\$291.42	\$18.28

Public Lighting System Investment.

To June 30, 1901.

The amount expended for investment accounts during the periods specified were as follows:

	Prior to June 30, 1899.	Year 1899.	Year 1900.	Total to June 30, '01.
Conduits	\$ 86,558.20	\$ 4,166.97	\$ 1,658.26	\$ 92,383.43
Cables	37,187.04	1,109.43	17,073.68	55,370.15
Real estate	63,125.00	.....	.....	63,125.00
Buildings and wharf....	110,004.50	.....	200.46	110,204.96
Lines and poles.....	136,063.48	5,271.79	3,297.80	144,633.07
Towers and lamp posts.	97,436.95	99.59	218.50	97,755.04
Arc plant	60,885.73	5.00	58.39	60,949.12
Incandescent plant	13,404.03	78.13	149.68	13,631.84
Steam plant	111,847.47	2.40	781.05	112,630.92
Railway track and scales.	10,982.31	.....	.....	10,982.31
Machine shop	8,014.16	.....	.....	8,014.16
Arc lamps and switches.	54,066.59	1,596.43	15.60	55,678.62
Belle Isle plant.....	24,228.01	1,954.79	113.41	26,296.21
Totals	\$813,803.47	\$14,284.53	\$23,566.83	\$851,654.83

Depreciation Account.

DEBITS.

To investment prior to June 30, 1897.....	\$729,222.73
To investment during year to June 30, 1898.....	60,923.00
To investment during year to June 30, 1899.....	23,657.74
To investment during year to June 30, 1900.....	14,284.53
To investment during year to June 30, 1901.....	23,566.83

Total amount charged to investment.....\$851,654.83

CONTRA.

(See introductory remarks in annual report of years referred to.)

By amount added to cost of lights for depreciation prior to June 30, 1897	\$ 40,145.73
By amount added to cost of lights for depreciation year ending June 30, 1898.....	22,500.00
By amount added to cost of lights for depreciation year ending June 30, 1899.....	22,534.71
By amount added to cost of lights for depreciation year ending June 30, 1900.....	22,287.22
By amount added to cost of lights for depreciation year ending June 30, 1901.....	22,325.61

Total amount added to cost of lights for depreciation.....\$129,793.27

Balance present investment June 30, 1901.....\$721,861.56

Arrangement of Arc Lamps.

The lighting of the city is done exclusively by means of arc lamps of 2,000 candle-power. The lights are placed on towers, posts and center suspensions, as the conditions demand. The 2,042 arc lamps in operation on June 30th, 1901, were distributed in 1,714 locations, as follows:

955 cranes	955	lamps.
152 center suspensions	152	"
297 mast arms	297	"
161 posts from underground.....	161	"
4 posts from underground.....	8	"
*114 three-light towers	342	"
22 four-light towers	88	"
1 six-light tower	6	"
On tower at water works.....	4	"
On base of three towers.....	3	"
In six buildings.....	26	"
		<hr/> 2,042
Stock, not in operation	11	
Discarded	2	13
		<hr/>
Total number of lamps.....		2,055

*Twenty-nine of these should be four-light towers.

There being no appropriation allowed for new lamp locations for the fiscal year 1900, one lamp was removed from each of these towers to furnish pole lights needed in new residence sections of the city.

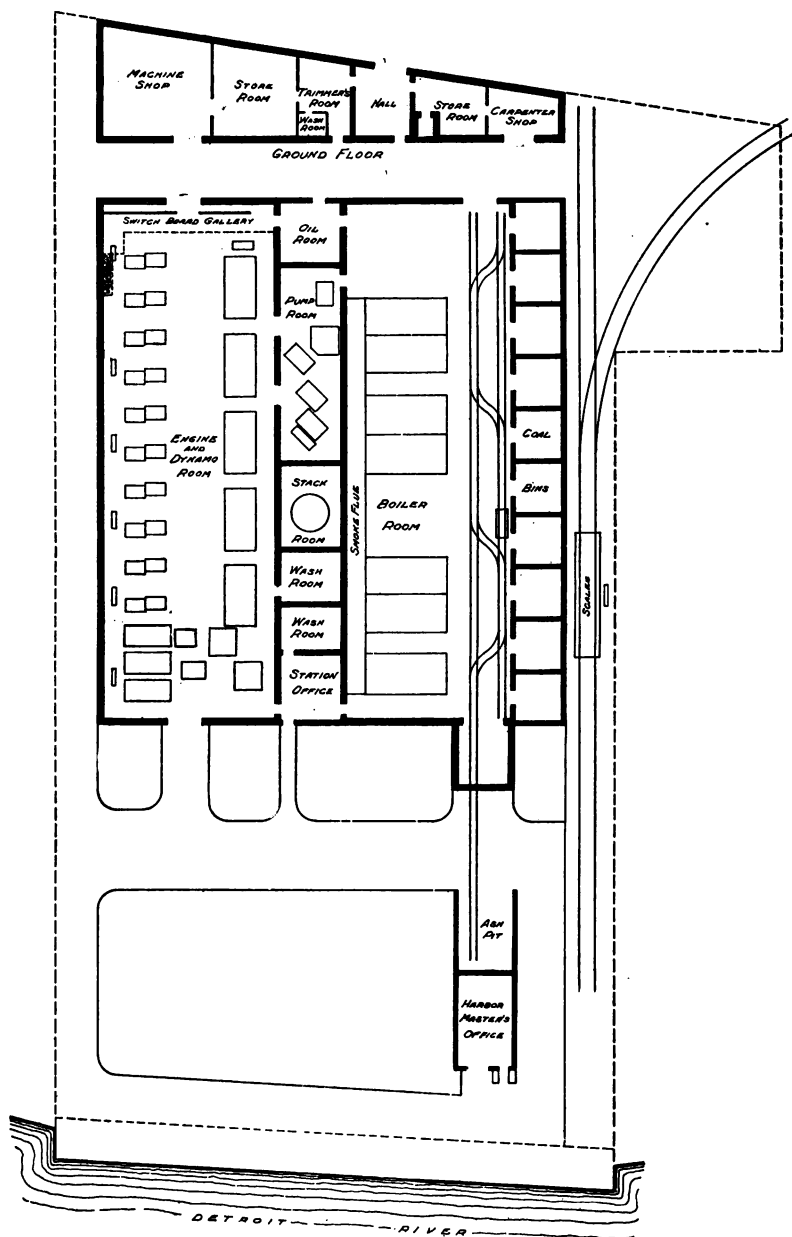
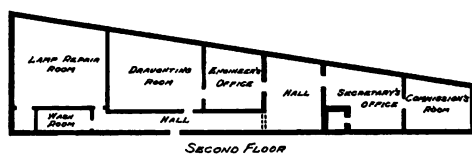
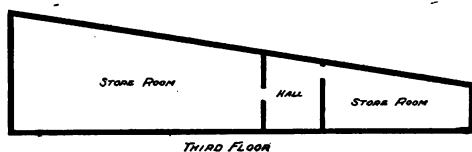
Ninety-eight tower lamps are on underground circuits.

Hours of Lighting.

Month.	Total Hrs. Operated.	Av'ge Hrs. Operated.
July	228:15	7:22
August	264:10	8:32
September	295:45	9:52
October	354:25	11:26
November	377:00	12:34
December	408:45	13:11
January	399:25	12:55
February	332:15	11:52
March	329:50	10:39
April	275:40	9:11
May	246:20	7:56
June	217:40	7:02
	<hr/> 3,729:30	<hr/> 10:13

Distribution of Lamps by Wards.

Ward.	Population.	Acreage.	Assessed Value of Real Estate.	STREETS.			Arc. Bernstein
				Total L. Ft.	Total Miles.	Paved L. Ft.	
City. . . 315,115	17,564.67		\$175,766.62c	2,764,933	523.86	1,416,530	1,956 13
EAST OF WOODWARD.							
1	16,557	1,072.39	\$ 31,360,350	177,150	33.55	139,400	214 3B.
3	19,248	736.23	7,471,810	126,678	23.99	77,200	108
5	21,325	636.36	6,712,550	116,720	22.10	79,820	104
7	18,931	666.48	5,857,250	112,243	21.25	64,945	95
9	29,636	875.73	7,145,220	156,240	29.59	66,175	113 2B.
11	20,211	646.14	5,882,070	134,175	25.41	69,525	100
13	16,446	1,070.61	6,025,110	165,685	31.37	61,375	95
15	10,433	1,151.54	6,144,520	163,053	30.97	64,850	75
17	11,728	2,560.00	8,083,060	344,539	65.25	55,700	96
Total. . . 164,515	9,415.48		\$ 84,681,940	1,496,483	283.48	678,990	1,000 5
WEST OF WOODWARD.							
2	12,656	836.96	\$ 36,912,760	141,784	26.85	124,350	169 2B.
4	18,094	937.44	13,490,820	159,679	30.24	119,220	127 2B.
6	20,861	780.58	8,756,350	132,552	25.10	100,925	112
8	20,292	991.79	8,285,830	179,086	33.91	106,630	123 2B.
10	24,258	979.68	7,166,480	139,685	26.64	109,450	118 2B.
12	19,440	990.79	5,792,210	130,930	24.79	72,885	105
14	14,869	1,175.36	5,813,380	160,499	30.39	70,520	112
16	20,130	1,456.59	4,866,850	224,235	42.46	33,560	90
Total. . . 150,600	8,149.19		\$ 91,084,680	1,268,450	240.38	737,540	956 8
Lamps in Wards as per above.							1956 13
“ on Belle Isle and Bridge							62
“ in Water Works							14
“ in Buildings.							10
Total Number of Lamps in Operation.							2042 13



GROUND PLAN OF PUBLIC LIGHTING STATION.

Public Buildings Lighted.

The public buildings lighted by incandescent lights and the number of 16 candle-power lamps in each, are as follows:

Public Lighting Station and Offices.....	400
City Hall and County Offices.....	*1,631
Public Library	948
Municipal Court Building.....	287
Board of Health Offices.....	53
Police Headquarters, Central Station.....	201
Police Headquarters, East Side.....	108
Police Headquarters, West Side.....	69
Woodbridge Street Police Station.....	28
Police Barns	86
Water Board Offices	132
Fire Department Headquarters, Engine No. 1.....	144
Fire Department, Telegraph Station.....	81
Engine House No. 2.....	40
Engine House No. 3.....	33
Engine House No. 6.....	38
Engine House No. 8.....	32
Engine House No. 9.....	26
Engine House No. 11.....	16
Hook and Ladder House No. 2.....	16
Hook and Ladder House No. 5.....	53
Board of Education Offices.....	163
Washington Normal School.....	71
Everett School	85
Norvell School	114
Capitol Square Fountain.....	23
Water Works Storage Grounds.....	39
House of Correction	750
G. A. R. Building.....	294
Department of Public Works, Eastern Yard.....	11
Washington Park Fountain	38
Russell School	8
Total	6,018

Belle Isle Park—

Bath House	101
Bicycle Shelter	67
Boat House	32
Detroit Boat Club	160
Casino	193
Dock	5
Park Barn	107
Police Station	48
Skating Pavilion	112
Miscellaneous	41
Yacht Club	64
Total Lamps	930
Total Lamps	6,948

*This includes 678 lamps used in decorating, and in "Welcome" signs, operated on an average of three nights a week.

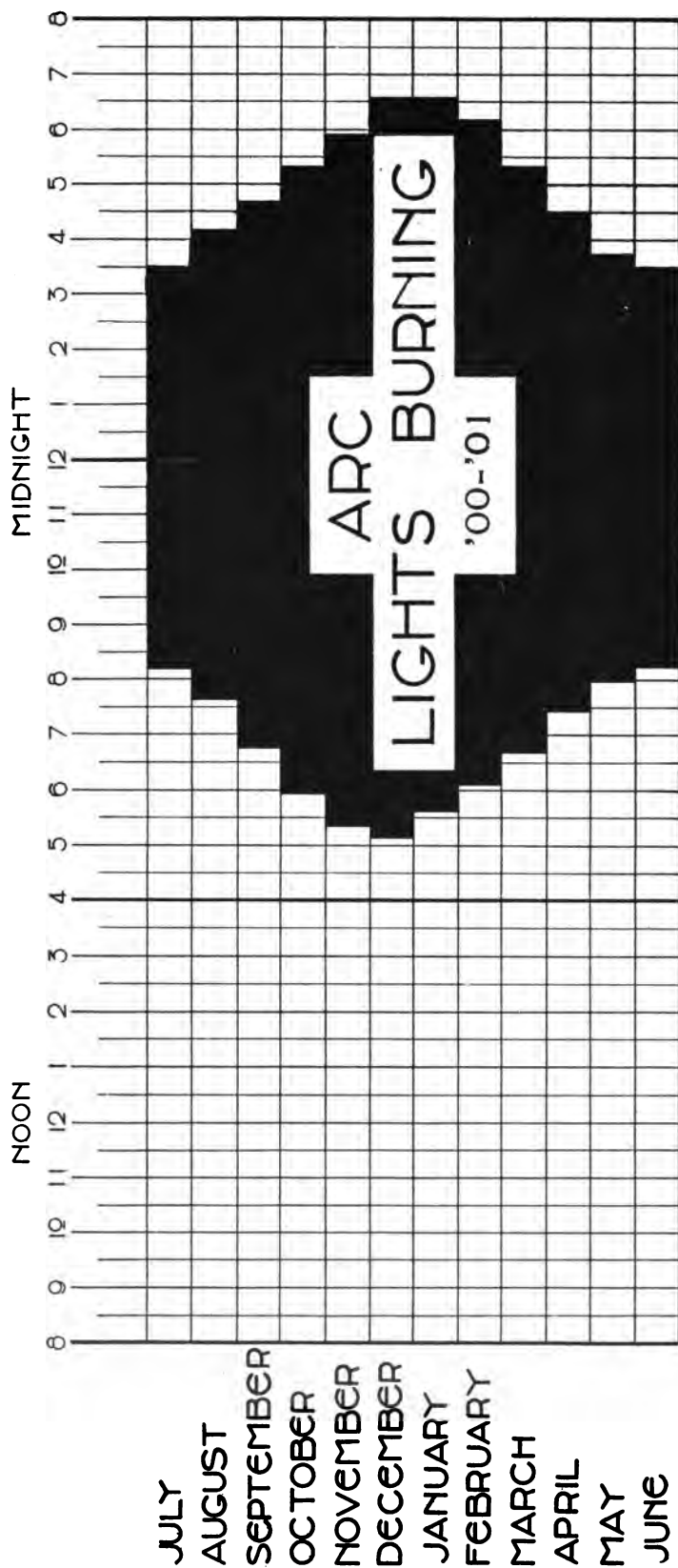


CHART IN BLACK REPRESENTING PERIOD OF ARC LIGHTS BURNING.

Lamps and Lamp Hours Operated.

The average number of lamps operated each month, with the total lamp hours scheduled, and the lamp hours "Out" during that time, are as follows:

Twelve Months to June 30, 1901.

	Average Number Lamps.	Total Lamp Hours Scheduled.	Total Lamp Hours Out. Hrs. Min.
July	2,007	454,539	141 37
August	2,030	532,085	271 12
September	2,031	595,144	939 43
October	2,027	711,939	497 21
November	2,028	760,290	327
December	2,034	827,530	206 53
January	2,045	813,855	325 33
February	2,044	676,355	264 44
March	2,045	671,919	231 21
April	2,040	561,507	457 01
May	2,037	501,363	308 46
June	2,050	445,207	121 08
Totals	2,035	7,551,732	4,092 19

The corresponding for the 12 months ending June 30, 1900, is as follows:

Twelve Months to June 30, 1900.

	Average Number Lamps.	Total Lamp Hours Scheduled	Total Lamp Hours Out. Hrs. Min.
July	1,938	446,507	127 35
August	1,937	505,193	194 30
September	1,951	576,136	951 37
October	1,950	686,667	1,417 08
November	1,956	749,171	944 31
December	1,963	811,979	592 52
January	1,967	786,041	448 25
February	1,974	651,192	182 12
March	1,978	643,851	462 05
April	1,978	537,681	506 24
May	1,983	470,029	172 17
June	1,977	410,312	139 19
Totals	1,963	7,274,752	6,138 55

Causes of Lamp Hours Out.

The causes of "Lamp Hours Out" for the year ending June 30th, 1901, are summarized as follows:

Month.	Line. Trouble.		Lamp Trouble.		Trimmers' Neglect.		Total.	
	Lmps.	Hrs.Min.	Lmps.	Hrs. Min.	Lmps.	Hrs.Min.	Lmps.	Hrs. Min.
1900.								
July,	4	16:30	9	30:39	22	94:28	35	141:37
August,	14	33:30	50	150:30	29	87:12	93	271:12
Sept.,	14	118:00	140	555:13	66	266:30	220	939:43
Oct.,	9	62:21	40	237:00	33	198:00	82	497:21
Nov.,	6	44:00	20	126:30	26	156:30	52	327:00
Dec.,	7	46:00	30	120:23	9	40:30	46	206:53
1901.								
Jan.,	12	60:06	24	222:57	7	42:30	43	325:33
Feb.,	11	85:20	20	139:06	5	40:20	36	264:46
March	10	70:30	17	104:30	8	56:21	35	231:21
April	6	24:51	91	411:00	7	21:10	104	457:01
May,	7	15:46	64	257:00	9	36:00	80	308:46
June,	10	50:00	11	71:08	..	....:	21	121:08
Total	110	626:54	516	2,425:56	221	1,039:31	847	4,092:21
1900,	42	138:56	818	4,151:47	498	1,848:12	1,358	6,138:55
1899,	487	2,645:12	200	1,196:52	222	1,197:39	909	5,039:43
1898,	1,479	5,606:13	129	772:01	214	1,087:09	1,822	7,465:23
1897,	108	403:02	56	358:15	88	609:10	242	1,371:07

Trimming Arc Lamps.

The work of trimming arc lamps is intrusted to the care of a head trimmer and 19 men. All the single carbon Adams-Bagnall lamps are located in the underground district, which is in the half-mile circle, and are trimmed daily. The balance are Brush double carbon lamps, supplied with current from overhead lines, and are trimmed every second day. These overhead lines are supplied from the station by trunk lines, one-half of which are underground through the half-mile circle.

Circuit.	Towers.	Tower Lamps.	Pole Lamps.	Cranes.	P. L. C. Mast Arms.	Center Sus- pensions.	Lamps in Bldgs.	Total No. of Lamps.	Miles.	Trim- mers No.
1	8	33	48	3	..	..	..	84	4.8	1
2	11	39	34	5	..	..	7	85	4.5	2
3	2	7	34	16	14	6	..	77	4.8	3
4	2	7	..	15	28	7	..	57	5.5	
6	2	6	..	22	20	7	..	55	5.3	4
5	2	6	..	38	5	8	..	57	4.7	
7	1	3	..	45	9	6	..	63	5.0	5
8	2	7	..	26	12	11	..	56	5.1	
10	2	6	..	27	10	12	..	55	4.9	6
9	2	6	..	27	17	7	..	57	4.4	
11	3	9	..	22	18	6	..	55	5.2	7
12	6	19	..	12	20	6	..	57	6.9	
14	3	9	..	25	17	6	..	57	6.3	8
13	1	3	..	40	9	2	..	54	5.8	
15	6	19	..	22	14	..	..	55	6.9	9
16	6	18	..	25	8	3	..	54	6.8	
18	4	12	..	33	2	..	..	47	7.5	10
17	1	3	..	43	3	..	..	49	9.4	
19	7	21	..	31	..	..	..	52	7.6	11
20	5	16	..	21	13	5	..	55	6.3	
22	4	13	1	23	8	8	..	53	6.5	12
21	2	6	..	24	15	9	..	54	5.9	
23	2	6	..	30	12	7	..	55	6.6	13
24	4	12	..	33	5	5	..	55	7.6	
26	8	25	..	25	..	3	..	53	7.4	14
25	4	12	..	35	6	..	..	53	6.1	
27	3	9	..	28	12	1	..	50	6.5	15
28	4	14	..	25	8	6	..	53	7.3	
30	5	15	..	29	5	6	..	55	7.8	16
29	5	15	..	28	..	10	..	53	8.5	
31	2	8	8	35	..	4	2	57	9.3	17
32	5	18	1	24	7	..	..	50	7.7	
34	6	18	..	31	..	1	..	50	8.2	18
33	4	12	..	38	..	..	..	50	8.5	
35	3	9	..	39	..	..	..	48	8.2	19
Eastern Market..		..	..	..	..	..	4	4	...	
Belle Isle....	2	6	43	6	..	..	13	68	...	20
<hr/>										
	120	117	160	051	207	152	26	2,042	220.8	

Comparative Kilowatt Hour Output..

Twelve Months to June 30, 1901.

Month.	Arc.	Incan.	Total.
July	211,355	33,804	245,159
August	247,400	36,234	283,634
September	276,737	36,012	312,749
October	327,436	41,884	369,320
November	345,624	47,046	392,670
December	376,516	47,685	424,201
January	370,298	51,690	421,988
February	307,734	41,464	349,198
March	305,707	44,526	350,233
April	257,182	40,576	297,758
May	236,917	39,348	276,265
June	212,483	37,692	250,175
Totals	3,475,389	497,961	3,973,350

Twelve Months to June 30, 1900.

Month.	Arc.	Incan.	Total.
July	205,387	28,114	233,501
August	232,381	30,694	263,075
September	264,991	34,126	299,117
October	315,870	38,194	354,064
November	340,878	43,522	384,400
December	369,451	48,632	418,083
January	357,628	50,104	407,732
February	296,284	42,581	338,865
March	292,947	41,072	334,019
April	244,645	35,308	279,953
May	216,205	35,814	252,019
June	190,786	33,436	224,222
Totals	3,327,453	461,597	3,789,050

Comparative Amount of Coal Consumed.

The total amount of coal consumed during the year, and the same reduced to the number of pounds per kilowatt hour with comparisons as follows:

Month.	—Year ending June 30, 1901.—		Year to June 30, 1900.	Year to June 30, 1899.	Year to June 30, 1898.
	Pounds coal consumed.	Pounds per Kil. hr.	Pounds per Kil. hr.	Pounds per Kil. hr.	Pounds per Kil. hr.
July	1,156,410	4.72	5.14	5.79	5.53
August	1,356,180	4.77	4.78	5.55	5.40
September	1,439,850	4.60	4.04	5.30	4.72
October	1,715,830	4.65	4.27	5.21	5.07
November	1,840,220	4.69	3.98	4.75	4.96
December	1,885,220	4.44	3.97	4.64	4.76
January	1,856,780	4.40	3.90	4.75	5.42
February	1,705,540	4.88	4.17	4.90	5.10
March	1,717,750	4.90	4.39	5.17	5.27
April	1,509,490	5.09	4.57	5.41	5.24
May	1,436,840	5.20	4.66	5.30	5.57
June	1,306,170	5.22	4.69	5.58	5.76
Totals	18,926,280	4.80	4.38	5.19	5.23

Year to June 30,	Lbs.
1900	16,741,070
Year to June 30,	
1899	18,166,430
Year to June 30,	
1898	17,075,525
Year to June 30,	
1897	15,032,230
Year to June 30,	
1896	13,114,531

Cost of Coal.

The prices paid per ton of 2,000 lbs. for coal, delivered on Public Lighting Commission side track, weights guaranteed, were:

Year ending June 30, 1896—Jackson Hill Lump.....	\$2.19
Year ending June 30, 1897—Jackson Hill Lump.....	2.12
Year ending June 30, 1898—Jackson Hill Lump.....	1.97
Year ending June 30, 1899—Jackson Hill Lump.....	1.97
Year ending June 30, 1900—Pocahontas Smokeless.....	1.99
Year ending June 30, 1901—West Virginia Lump.....	2.20

Inside Wiring Inspection Department.

The work of the department having in charge the inspection of inside electrical wiring and apparatus for the year ending June 30, 1901, was as follows:

Month of	Number of Applications for and Per- mits Issued.	Number of Approvals and Certificates Issued.	Amount of Fees Collected.	Expenses.
July	196	200	\$ 227.05	\$ 168.62
August	211	210	220.25	191.32
September	267	215	236.75	177.22
October	363	342	277.25	195.00
November	294	320	259.00	199.50
December	239	296	352.75	195.92
January	212	199	179.25	205.15
February	184	213	203.25	196.74
March	224	199	215.50	207.77
April	259	234	269.25	178.10
May	253	248	231.50	173.05
June	265	241	229.25	178.25
Totals	2,967	2,917	\$2,901.05	\$2,266.64

Twelve Months to June 30, 1900.

Month of	Number of Applications for and Per- mits Issued.	Number of Approvals and Certificates Issued.	Amount of Fees Collected.	Expenses.
July	193	207	\$ 271.00	\$ 180.82
August	188	174	168.25	186.44
September	332	253	332.00	200.27
October	388	299	269.25	189.32
November	306	296	302.00	200.07
December	256	289	261.00	263.82
January	198	247	196.00	204.07
February	182	184	191.00	181.82
March	223	233	232.95	173.32
April	195	202	190.50	184.32
May	244	225	226.50	169.82
June	241	221	229.75	172.57
Totals	2,946	2,830	\$2,870.20	\$2,306.66

Employes and Compensation.

The employes of the Public Lighting Commission on June 30, 1901, were as follows:

Executive :	Rate per Year.	Rate per day and 7 days per week.	Rate per day and 6 days per week.
1 Secretary	\$1,200.00	....	....
1 General Supt.....	2,000.00	....	....
1 Assistant General Supt.....	1,200.00	....	....
1 Storekeeper	420.00	....	....
1 Superintendent's clerk	600.00	....	....
1 Janitor .....	....	....	\$1.60
1 Draughtsman	660.00	....	....
—			
7			

Inspection Department:

1 Inspector	\$1,350.00	....	....
1 Permit clerk	720.00	....	....
—			
2			

Station:

1 First engr. and machinist..	....	\$3.00	....
2 First engineers, each.....	....	3.00	....
3 Second engineers, each.....	....	2.00	....
7 Firemen, each .....	....	1.75	....
1 Coal passer .....	....	1.75	....
6 Oilers, each .....	....	1.75	....
1 Handy man	720.00	....	....
3 Operating electricians, each.	....	2.50	....
3 Switch tenders, each.....	....	1.50	....
6 Laborers, each .....	....	....	1.50
—			
33			

Lighting:

1 Head trimmer	900.00	....	....
19 Trimmers, each .....	....	2.00	....
2 Patrolmen with horse and buggy, each .....	....	3.25	....
1 Patrolman .....	....	....	3.25
1 Belle Isle man.....	900.00	....	....
—			

Employees and Compensation—Continued.

Maintenance and Repairs :	Rate per Year.	Rate per day and 7 days per week.	Rate per day and 6 days per week.
1 Blacksmith	2.50
1 Blacksmith's helper	1.00
1 Carpenter	2.25
1 Painter	2.00
1 Lathe man	2.50
1 Steamfitter	2.75
1 Foreman lamp and cable department	2.50
2 Helpers in lamp room, each.	2.00
1 Helper in lamp room.....	1.50
1 Apprentice in lamp room...	1.00
1 Apprentice in lamp room...50
1 Conduit man	2.50
1 Conduit helper.....	1.50
1 Line foreman	3.00
4 Linemen, each	2.50
1 Line gang helper.....	1.75
1 Wireman	2.50
5 Laborers, each	1.50

 26

Total employees, 92

One day's work consists of 8 hours, proportionate wages for overtime.
 Employees paid by the yearly rate are allowed no overtime.

Comparative Cash Cost of an Arc Light.

The year's operating expenses can be divided between the arc and the incandescent in proportion to the electrical output. That chargeable to arc lighting would be \$86,675.58, which amount reduced to the cost of an arc lamp for one year shows the following relative figures:

Department.	Wages.	Stores.	Total.
Maintenance	\$ 4.85	\$ 2.95	\$ 7.80
Executive	2.93	.49	3.42
Station	9.21	9.81	19.02
Lighting	7.80	4.41	12.21
Shop supplies .....	....	.05	.05
Surgeon and hospital.....	.02	.07	.09
Totals	\$24.81	\$17.78	\$42.59

The corresponding figures for the twelve months ending June 30, 1900, are as follows:

Department.	Wages.	Stores.	Total.
Maintenance	\$ 4.51	\$ 1.96	\$ 6.47
Executive	3.27	.46	3.73
Station	9.38	8.25	17.63
Trimming	7.33	4.88	12.21
Shop .....	....	.06	.06
Injuries and damages.....	.06	.14	.20
Totals	\$24.55	\$15.75	\$40.30

The corresponding figures for the twelve months ending June 30, 1899, are as follows:

Department.	Wages.	Stores.	Total.
Maintenance	\$ 5.87	\$ 2.50	\$ 8.37
Executive	3.56	.37	3.93
Station	10.32	9.51	19.83
Trimming	10.20	3.91	14.11
Shop .....	....	.05	.05
Injuries and damages.....	.03	.14	.17
Totals	\$29.98	\$16.48	\$46.46
Twelve months to June 30, '98.	\$33.27	\$18.58	\$51.85
Twelve months to June 30, '97.	43.57	20.62	64.19

Comparison of Operating Disbursements.

The operating disbursements for the year ending June 30, 1901, in the various departments, if partitioned between wages and stores, will show the following division on the basis of each \$100.00 expended:

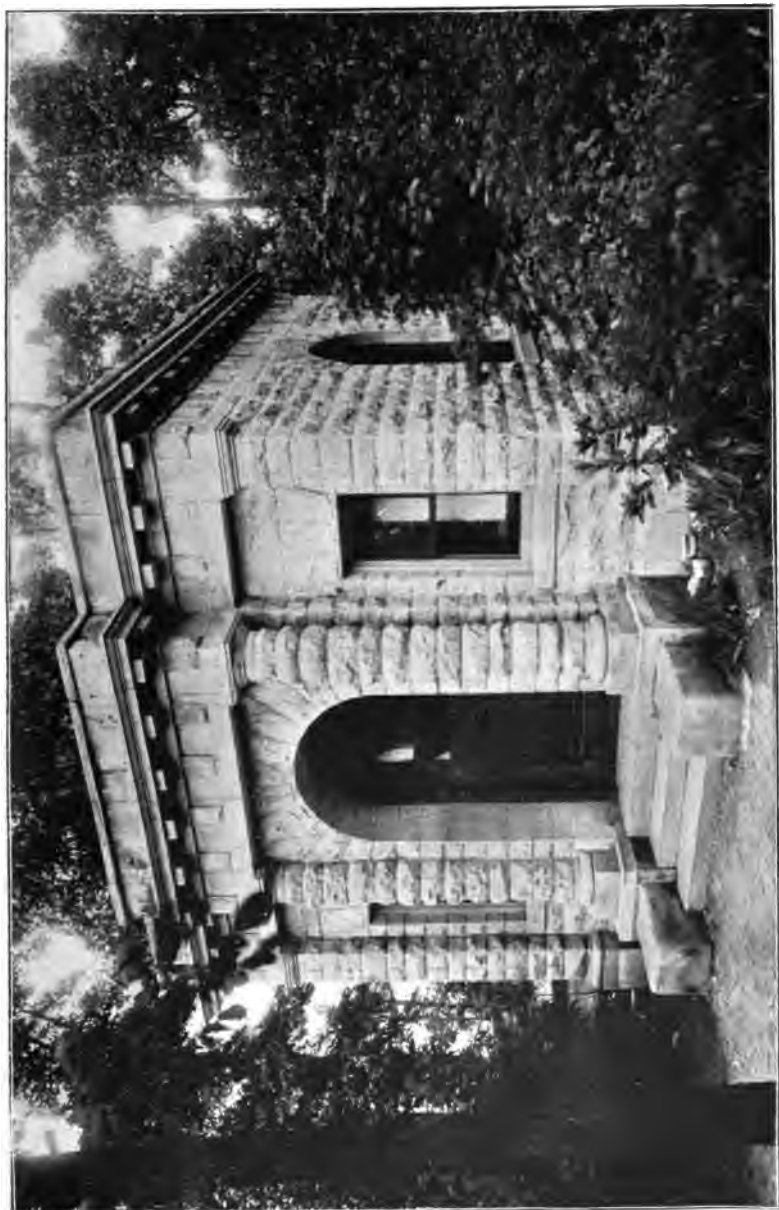
Department.	Wages.	Stores.	Total.
Maintenance	\$11.38	\$ 6.92	\$18.31
Executive	6.89	1.16	8.05
Station	21.62	23.04	44.66
Trimming	18.29	10.36	28.65
Shop .....	....	.11	.11
Injuries and damages.....	.05	.17	.22
Totals	\$58.24	\$41.76	\$100.00

The corresponding figures for the twelve months ending June 30, 1900, are:

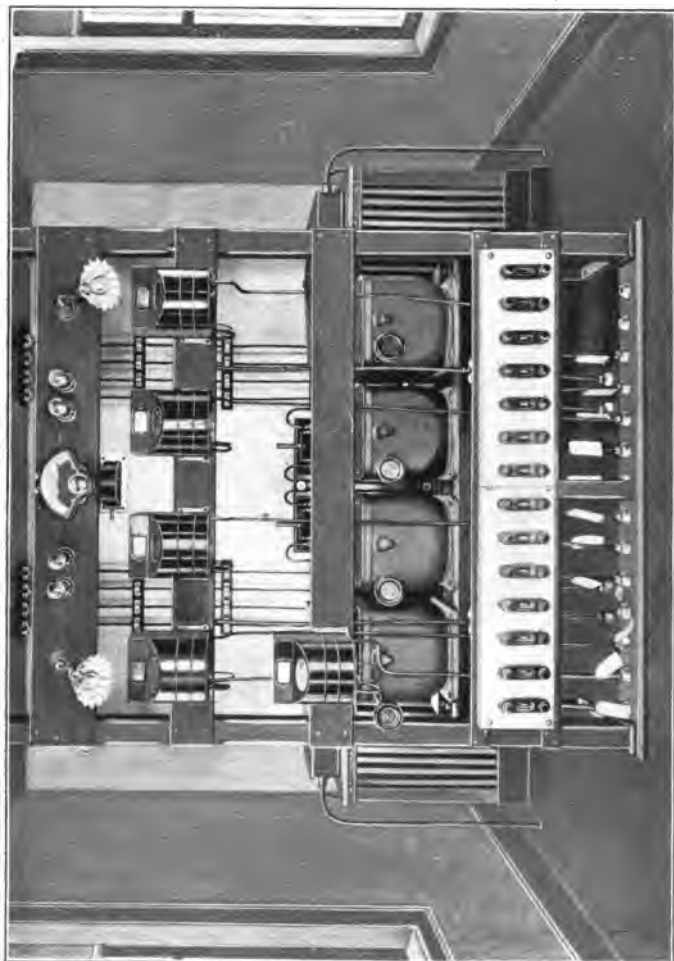
Department.	Wages.	Stores.	Total.
Maintenance	\$11.18	\$ 4.87	\$ 16.05
Executive	8.11	1.13	9.24
Station	23.28	20.47	43.75
Trimming	18.21	12.11	30.32
Shop .....	....	.15	.15
Injuries and damages.....	.16	.33	.49
Totals	\$60.94	\$39.06	\$100.00

The corresponding figures for the twelve months ending June 30, 1899, are:

Department.	Wages.	Stores.	Total.
Maintenance	\$12.57	\$ 5.44	\$ 18.01
Executive	7.65	.81	8.46
Station	22.21	20.46	42.67
Trimming	21.95	8.41	30.36
Shop .....	...	.12	.12
Injuries and damages.....	.06	.32	.38
Totals	\$64.44	\$35.56	\$100.00
Year ending June 30, 1898....	\$64.16	\$35.84	\$100.00
Year ending June 30, 1897....	67.89	32.11	100.00



TRANSFORMER HOUSE—BELLE ISLE PARK.



INTERIOR TRANSFORMER HOUSE—BELLE ISLE PARK.

Cash Cost of Operation—July, 1900.

Output this month.. 245,149 K. W. Hours

Output July, 1899... 233,501 K. W. Hours

	Wages.	Stores.	Total.	Cost per K. W. Hour.
Maintenance:				
Bldgs., track, dock, etc.....	\$ 78.00	\$ 24.11	\$ 102.11	....
Steam plant	106.26	129.84	236.10	....
Electric plant	29.97	9.03	39.00	....
Miscel. tools and mach'y....	82.16	24.87	107.03	...
Conduits	15.25	....	15.25	....
Towers and lamp posts.....	192.71	90.06	282.77	....
Arc lamps	247.30	70.70	318.00	....
Lines and cables.....	351.26	35.95	387.21	....
Total maintenance	\$1,102.91	\$ 384.56	\$1,487.47	.00607
Executive:				
Salary Sec'y and City Elec..	\$ 266.66	....	\$ 266.66	....
Printing and stationery.....	....	\$ 17.13	17.13	....
Store room	75.00	....	75.00	....
Office	95.00	15.54	110.54	....
Superintendence	150.00	....	150.00	....
Total executive	\$ 586.66	\$ 32.67	\$ 619.33	.00253
Station:				
Oils .....	....	\$ 78.49	\$ 78.49	.00032
Waste .....	....	19.43	19.43	.00008
Coal .....	....	1,158.38	1,158.38	.00473
Miscellaneous supplies .....	....	84.37	84.37	.00034
Wages	\$1,787.75	....	1,787.75	.00729
Total station	\$1,787.75	\$1,340.67	\$3,128.42	.01267
Lighting:				
Trimming and patrolling....	\$1,320.49	....	\$1,320.49	....
Carbons .....	....	\$ 434.42	434.42	....
Incandescent renewals .....	....	89.30	89.30	....
Incand. lighting expense....	5.11	.21	5.32	....
Globes and nets.....	....	77.09	77.09	....
Miscellaneous supplies .....	....	.49	.49	....
Belle Isle Park.....	84.43	9.52	93.95	....
Total lighting	\$1,410.03	\$ 611.03	\$2,021.06	.00824
Shop supplies .....	....	\$ 3.10	\$ 3.10	.00001
Surgeon and hospital.....	....	....	....	.00000
Total operating expense..	\$4,887.35	\$2,372.03	\$7,259.38	.02961
July, 1899, was.....	\$4,159.64	\$2,144.93	\$6,404.67	.02743
July, 1898, was.....	5,173.50	2,566.39	7,739.89	.03689
July, 1897, was.....	5,952.55	2,525.20	8,477.75	.04522

Cash Cost of Operation—August, 1900.

Output this month, 283,634 K. W. Hours.

Output August, 1899, 263,075 K. W. Hours.

	Wages.	Stores.	Total.	Cost per K. W. Hour.
Maintenance:				
Bldgs., track, dock, etc.....	\$ 43.70	\$ 924.89	\$ 968.59	....
Steam plant	100.11	145.19	245.30	....
Electric plant	30.70	1.38	32.08	....
Miscel. tools and mach'y....	109.03	31.53	140.56	....
Conduits .....	.87	1.20	2.07	....
Towers and lamp posts.....	213.56	96.86	310.42	....
Arc lamps	318.03	78.61	396.64	....
Lines and cables.....	286.56	117.94	404.50	....
Total maintenance	\$1,102.56	\$1,397.60	\$2,500.16	.00882
Executive:				
Salary Sec'y and City Elec..	\$ 266.66	....	\$ 266.66	....
Printing and stationery.....	....	\$ 91.43	91.43	....
Store room	80.98	....	80.98	....
Office	85.20	32.90	118.10	....
Superintendence and drafting	154.00	8.00	162.00	....
Total executive	\$ 586.84	\$ 132.33	\$ 719.17	.00253
Station:				
Oils .....	....	\$ 82.36	\$ 82.36	.00029
Waste .....	....	19.74	19.74	.00007
Coal .....	....	1,463.92	1,463.92	.00516
Miscellaneous supplies .....	....	96.45	96.45	.00034
Wages	\$1,803.68	....	1,803.68	.00636
Total station	\$1,803.68	\$1,662.47	\$3,466.15	.01222
Lighting:				
Trimming and patrolling....	\$1,324.78	....	\$1,324.78	....
Carbons .....	....	\$ 553.09	553.09	....
Incand. renewals .....	....	91.56	91.56	....
Incand. lighting expense....	8.23	....	8.23	....
Globes and nets.....	....	90.41	90.41	....
Miscellaneous supplies .....	....	49.02	49.02	....
Belle Isle Park.....	86.12	....	86.12	....
Total lighting	\$1,419.13	\$ 784.08	\$2,203.21	.00777
Shop supplies .....	....	\$ 10.28	\$ 10.28	.00003
Surgeon and hospital.....	\$ 17.50	95.75	113.25	.00040
Total operating expense..	\$4,929.71	\$4,082.51	\$9,012.22	.03177
August, 1899, was.....	\$4,564.43	\$2,546.77	\$7,111.20	.02703
August, 1898, was.....	5,223.47	2,885.42	8,108.89	.03287
August, 1897, was.....	5,350.85	2,661.68	8,012.53	.03784

Cash Cost of Operation—September, 1900.

Output for this month.... 312,749 K. W. Hours

Output September, 1899.. 299,117 K. W. Hours

	Wages.	Stores.	Total.	Cost per K. W. Hour.
Maintenance:				
Bldgs., track, dock, etc.....\$	25.01	....	\$ 25.01	....
Steam plant	97.48	\$ 121.71	219.19	....
Electric plant	34.71	11.35	46.06	....
Miscel. tools and mach'y....	71.87	61.40	133.27	....
Conduits	27.12	.87	27.99	....
Towers and lamp posts....	227.14	164.99	392.13	....
Arc lamps	224.54	79.59	304.13	....
Lines and cables	462.52	167.60	630.12	....
Total maintenance	\$1,170.39	\$ 607.51	\$1,777.90	.00569
Executive:				
Salary Sec'y and City Elec..\$	266.66	....	\$ 266.66	....
Printing and stationery....	....	\$ 8.93	8.93	....
Store room	75.37	....	75.37	....
Office	64.00	13.45	77.45	....
Superintendence and drafting	150.00	12.90	162.90	....
Total executive	\$ 556.03	\$ 35.28	\$ 591.31	.00189
Station:				
Oils .....	....	\$ 80.69	\$ 80.69	.00026
Waste .....	....	19.11	19.11	.00006
Coal .....	....	1,583.84	1,583.84	.00507
Miscellaneous supplies .....	....	102.08	102.08	.00031
Wages	\$1,724.98	....	1,724.98	.00552
Total station	\$1,724.98	\$1,785.72	\$3,510.70	.01122
Lighting:				
Trimming and patrolling...\$	1,301.48	....	\$1,301.48	...
Carbons .....	....	\$ 699.37	699.37	...
Incand. renewals .....	....	112.66	112.66	....
Incand. lighting expense....	19.75	.44	20.19	....
Globes and nets.....	....	71.53	71.53	....
Miscellaneous supplies .....	....	31.83	31.83	....
Belle Isle Park.....	83.13	9.37	92.50	...
Total lighting	\$1,404.36	\$ 925.20	\$2,329.56	.00745
Shop supplies .....	....	\$ 3.06	\$ 3.06	.00001
Surgeon and hospital.....	....	21.00	21.00	.00007
Total operating expense..	\$4,855.76	\$3,377.77	\$8,233.53	.02633
September, 1899, was.....	\$4,437.81	\$2,676.14	\$7,113.95	.02378
September, 1898, was.....	5,089.36	2,775.18	7,864.54	.02833
September, 1897, was.....	5,363.06	3,012.72	8,375.78	.03459

Cash Cost of Operation—October, 1900.

Output this month..... 369,320 K. W. Hours

Output October, 1899.. 354,064 K. W. Hours

	Wages.	Stores.	Total. per	Cost K. W. Hour.
Maintenance:				
Bldgs., track, dock, etc.....\$	27.52	\$ 77.92	\$ 105.44	....
Steam plant	103.00	117.82	220.82	....
Electric plant	24.84	261.55	286.39	....
Miscel. tools and mach'y....	45.46	10.87	56.33	....
Conduits	19.95	....	19.95	....
Towers and lamp posts.....	211.90	61.40	273.30	...
Arc lamps	149.07	53.09	202.16	....
Lines and cables.....	452.71	35.17	487.88	....
Total maintenance	\$1,034.45	\$ 617.82	\$1,652.27	.00448
Executive:				
Salary Sec'y and City Elec..\$	266.66	....	\$ 266.66	....
Printing and stationery.....	....	\$ 485.51	485.51	....
Store room	89.13	....	89.13	....
Office	65.90	11.55	77.45	....
Superintendence and drafting	153.50	59.00	212.50	....
Total executive	\$ 579.19	\$ 556.06	\$1,131.25	.00306
Station:				
Oils .....	....	\$ 67.40	\$ 67.40	.00018
Waste .....	....	20.13	20.13	.00005
Coal .....	....	1,887.41	1,887.41	.00511
Miscellaneous supplies .....	....	101.00	101.00	.00028
Wages	\$1,841.01	....	1,841.01	.00498
Total station	\$1,841.01	\$2,075.94	\$3,916.95	.01060
Lighting:				
Trimming and patrolling...\$	1,379.47	....	\$1,379.47	....
Carbons .....	....	\$ 839.69	839.69	....
Incand. renewals .....	....	145.96	145.96	....
Incand. lighting expense....	28.87	7.09	35.96	....
Globes and nets.....	....	78.84	78.84	....
Miscellaneous supplies .....	....	28.03	28.03	....
Belle Isle Park.....	109.31	2.60	111.91	....
Total lighting	\$1,517.65	\$1,102.21	\$2,619.86	.00710
Shop supplies .....	....	\$ 5.08	\$ 5.08	.00001
Surgeon and hospital.....\$	7.87	2.00	9.87	.00003
Total operating expense..\$	4,976.17	\$4,359.11	\$9,335.28	.02528
October, 1899, was.....\$	4,558.39	\$3,260.89	\$7,819.28	.02208
October, 1898, was.....	5,536.87	3,244.40	8,781.27	.02698
October, 1897, was.....	5,208.99	3,091.68	8,300.67	.02824

Cash Cost of Operation—November, 1900.

Output this month..... 392,670 K. W. Hours			
Output November, 1899.. 384,400 K. W. Hours			
	Wages.	Stores.	Total. per K. W. Hour.
Maintenance:			
Bldgs., track, dock, etc.....	\$ 30.61	\$ 19.52	\$ 50.13
Steam plant	85.20	191.95	277.15
Electric plant	40.56	9.29	49.85
Miscel. tools and mach'y....	51.75	54.13	105.88
Conduits	21.13	.84	21.97
Towers and lamp posts.....	93.79	287.87	381.66
Arc lamps	173.83	55.64	229.47
Lines and cables.....	453.13	176.43	629.56
Total maintenance	\$ 950.00	\$ 795.67	\$ 1,745.67
Executive:			
Salary Sec'y and City Elec..	\$ 266.66	....	\$ 266.66
Printing and stationery.....	....	\$ 40.90	40.90
Store room	76.46	....	76.46
Office	64.60	15.78	80.38
Superintendence and drafting	155.00	2.90	157.90
Total executive	\$ 562.72	\$ 59.58	\$ 622.30
Station:			
Oils .....	....	\$ 65.72	\$ 65.72
Waste .....	....	19.01	19.01
Coal .....	....	2,024.24	2,024.24
Miscellaneous supplies .....	....	111.06	111.06
Wages	\$1,777.31	....	1,777.31
Total station	\$1,777.31	\$2,220.03	\$3,997.34
Lighting:			
Trimming and patrolling....	\$1,431.33	....	\$1,431.33
Carbons .....	....	\$ 742.89	742.89
Incand. renewals .....	....	170.38	170.38
Incand. lighting expense....	24.07	18.58	42.65
Globes and nets.....	....	90.13	90.13
Miscellaneous supplies .....	....	19.14	19.14
Belle Isle Park.....	86.36	9.37	95.73
Total lighting	\$1,541.76	\$1,050.49	\$2,592.25
Shop supplies .....	....	\$ 15.26	\$ 15.26
Surgeon and hospital.....	....	3.40	3.40
Total operating expense..	\$4,831.79	\$4,144.43	\$8,976.22
November, 1899, was.....	\$4,569.91	\$3,297.93	\$7,967.84
November, 1898, was.....	5,503.55	3,323.44	8,826.99
November, 1897, was.....	5,125.03	3,265.06	8,390.09

Cash Cost of Operation—December, 1900.

Output this month..... 424,201 K. W. Hours

Output December, 1899.. 418,083 K. W. Hours

	Wages.	Stores.	Total.	Cost per K. W. Hour.
Maintenance:				
Bldgs., track, dock, etc.....\$	19.70	\$ 5.14	\$ 24.84	....
Steam plant	100.98	177.09	278.07	....
Electric plant	68.90	3.53	72.43	....
Miscel. tools and mach'y.....	30.67	6.43	37.10	....
Conduits	20.00	8.62	28.62	....
Towers and lamp posts.....	171.68	29.48	201.16	....
Arc lamps	224.84	38.94	263.78	....
Lines and cables.....	417.54	454.58	872.12	....
Total maintenance	\$1,054.31	\$ 723.81	\$1,778.12	.00419
Executive:				
Salary Sec'y and City Elec..\$	266.66	....	\$ 266.66	....
Printing and stationery.....	....	\$ 17.11	17.11	....
Store room	91.16	2.12	93.28	....
Office	64.00	4.78	68.78	....
Superintendence and drafting.	155.00	....	155.00	....
Total executive	\$ 576.82	\$ 24.01	\$ 600.83	.00142
Station:				
Oils .....	....	\$ 73.05	\$ 73.05	.00017
Waste .....	....	22.23	22.23	.00005
Coal .....	....	2,099.87	2,099.87	.00495
Miscellaneous supplies .....	....	77.72	77.72	.00019
Wages	\$1,860.94	....	1,860.94	.00439
Total station	\$1,860.94	\$2,272.87	\$4,133.81	.00975
Lighting:				
Trimming and patrolling...\$	1,441.85	....	\$1,441.85	....
Carbons .....	....	\$ 765.66	765.66	....
Incand. lamp renewals.....	....	161.45	161.45	....
Incand. lighting expense....	28.21	3.17	31.38	....
Globes and nets.....	....	51.76	51.76	....
Miscellaneous .....	....	8.20	8.20	....
Belle Isle Park.....	76.75	....	76.75	....
Total lighting	\$1,546.81	\$ 990.24	\$2,537.05	.00598
Shop supplies .....	....	\$ 1.97	\$ 1.97	....
Surgeon and hospital.....	....	26.00	26.00	.00006
Total operating expense...	\$5,038.88	\$4,038.90	\$9,077.78	.02140
December, 1899, was.....	\$4,648.81	\$3,234.26	\$7,883.07	.01885
December, 1898, was.....	5,783.62	3,195.68	8,979.30	.02323
December, 1897, was.....	5,339.33	3,398.78	8,738.11	.02338

Cash Cost of Operation—January, 1901.

Output this month..... 421,988 K. W. Hours

Output January, 1900.. 407,732 K. W. Hours

	Wages.	Stores.	Total.	Cost per K. W. Hour.
Maintenance:				
Bldgs., track, dock, etc.....	\$ 42.15	\$ 50.94	\$ 93.09	....
Steam plant	115.75	133.21	248.96	....
Electric plant	41.90	159.70	201.60	....
Miscel. tools and mach'y....	58.51	47.32	105.83	....
Conduits	43.00	21.81	64.81	....
Towers and lamp posts.....	63.50	15.50	79.00	....
Arc lamps	166.88	38.67	205.55	....
Lines and cables.....	345.11	94.67	439.78	....
Total maintenance	\$ 876.80	\$ 561.82	\$ 1,438.62	.00341
Executive:				
Salary Sec'y and City Elec..	\$ 266.66	....	266.66	....
Printing and stationery.....	....	21.03	21.03	....
Store room	87.90	3.00	90.90	....
Office	66.00	27.44	93.44	....
Superintendence and drafting.	155.00	1.00	156.00	....
Total executive.....	\$ 575.56	\$ 52.47	\$ 628.03	.00149
Station:				
Oils .....	....	\$ 76.02	\$ 76.02	.00018
Waste .....	....	19.33	19.33	.00004
Coal .....	....	2,087.54	2,087.54	.00495
Miscellaneous supplies .....	....	137.97	137.97	.00033
Wages	1,874.48	....	1,874.48	.00444
Total station	\$ 1,874.48	\$ 2,320.86	\$ 4,195.34	.00994
Lighting:				
Trimming and patrolling....	\$ 1,462.06	....	\$ 1,462.06	....
Carbons .....	....	\$ 784.01	784.01	....
Incand. lamp renewals.....	....	92.19	92.19	....
Incand. lighting expense....	24.55	1.64	26.19	....
Globes and nets.....	....	23.49	23.49	....
Miscellaneous supplies .....	....	10.94	10.94	....
Belle Isle Park.....	87.56	....	87.56	....
Total lighting	\$ 1,574.17	\$ 912.27	\$ 2,486.44	.00589
Shop supplies .....	....	\$ 22.10	\$ 22.10	.00005
Surgeon and hospital.....	....	....	....	....
Total operating expense...	\$ 4,901.01	\$ 3,869.52	\$ 8,770.53	.02078
January, 1900, was.....	\$ 4,776.83	\$ 3,344.21	\$ 8,121.04	.01991
January, 1899, was.....	5,624.41	3,226.30	8,850.71	.02316
January, 1898, was.....	5,462.29	3,634.15	9,096.44	.02517

Cash Cost of Operation—February, 1901.

Output this month, 349.198 K. W. Hours.

Output February, 1900, 338,865 K. W. Hours.

				Cost per K. W. Hour.
Maintenance:	Wages.	Stores.	Total.	
Bldgs., track, dock, etc.....	\$ 61.02	\$ 21.89	\$ 82.91	....
Steam plant	59.02	68.45	127.47	....
Electric plant	79.69	.75	80.44	....
Miscel. tools and mach'y....	58.72	5.74	64.46	....
Conduits	78.58	3.00	81.58	....
Towers and lamp posts.....	6.41	5.00	11.41	....
Arc lamps	206.84	30.13	236.97	....
Lines and cables.....	289.82	66.34	356.16	....
Total maintenance	\$ 840.10	\$ 201.30	\$ 1,041.40	.00299
Executive:				
Salary Sec'y and City Elec..	\$ 266.66	....	266.66	....
Printing and stationery.....	....	\$ 38.29	38.29	....
Store room	78.03	.25	78.28	....
Office	62.60	4.22	66.82	....
Superintendence and drafting.	155.00	3.00	158.00	....
Total executive	\$ 562.29	\$ 45.76	\$ 608.05	.00174
Station:				
Oils .....	....	\$ 64.51	\$ 64.51	.00019
Waste .....	....	19.81	19.81	.00006
Coal .....	....	1,876.09	1,876.09	.00537
Miscellaneous supplies .....	....	20.42	20.42	.00006
Wages	1,658.35	....	1,658.35	.00475
Total station	\$ 1,658.35	\$ 1,980.83	\$ 3,639.18	.01043
Lighting:				
Trimming and patrolling....	\$ 1,329.61	\$ 13.00	\$ 1,342.61	....
Carbons .....	....	684.41	684.41	....
Incand. lamp renewals.....	....	164.32	164.32	....
Incand. lighting expense....	27.56	2.20	29.76	....
Globes and nets.....	....	36.71	36.71	....
Miscellaneous supplies .....	....	4.16	4.16	....
Belle Isle Park.....	78.87	....	78.87	....
Total lighting	\$ 1,436.04	\$ 904.80	\$ 2,340.84	.00670
Shop supplies .....	....	\$ 6.08	\$ 6.08	.00002
Surgeon and hospital.....	....	....	....	....
Total operating expense..	\$ 4,496.78	\$ 3,138.77	\$ 7,635.55	.02188
February, 1900, was.....	\$ 4,370.85	\$ 2,985.78	\$ 7,329.63	.02163
February, 1899, was.....	5,249.31	2,701.34	7,950.65	.02490
February, 1898, was.....	5,152.92	3,166.43	8,319.35	.02731
February, 1897, was.....	6,122.85	2,644.71	8,767.56	.03243

Cash Cost of Operation—March, 1901.

Output this month.... 350,233 K. W. Hours

Output March, 1900.. 334,019 K. W. Hours

				Cost per K. W. Hour.
Maintenance :	Wages.	Stores.	Total.	
Bldgs., track, dock, etc.....	\$ 51.27	\$ 26.08	\$ 77.35	....
Steam plant	91.15	253.39	344.54	....
Electric plant	151.57	22.18	173.75	....
Miscel. tools and mach'y....	34.42	10.34	44.76	....
Conduits	15.00	.50	15.50	....
Towers and lamp posts.....	85.84	20.30	106.14	....
Arc lamps	199.59	53.96	253.55	....
Lines and cables.....	270.18	99.04	369.22	....
Total maintenance	\$ 899.02	\$ 485.79	\$ 1,384.81	.00396
Executive :				
Salary Sec'y and City Elec..	\$ 266.66	....	\$ 266.66	....
Printing and stationery.....	....	\$ 79.53	79.53	....
Store room	90.60	....	90.60	....
Office	66.00	17.05	83.05	....
Superintendence and drafting	155.00	2.50	157.50	....
Total executive	\$ 578.26	\$ 99.08	\$ 677.34	.00193
Station :				
Oils .....	....	\$ 69.63	\$ 69.63	.00019
Waste .....	....	22.68	22.68	.00006
Coal .....	....	1,889.53	1,889.53	.00540
Miscellaneous supplies .....	....	154.83	154.83	.00044
Wages	\$1,816.61	....	1,816.61	.00519
Total station	\$1,816.61	\$2,136.67	\$3,953.28	.01128
Lighting :				
Trimming and patrolling...	\$1,476.85	....	\$1,476.85	....
Carbons .....	....	\$ 712.05	712.05	....
Incand. lamp renewals.....	....	88.61	88.61	....
Incand. lighting expense....	34.83	2.85	37.68	....
Globes and nets.....	....	34.43	34.43	....
Miscellaneous supplies .....	....	16.28	16.28	....
Belle Isle Park.....	90.74	12.84	103.58	....
Total lighting	\$1,602.42	\$ 867.06	\$2,469.48	.00705
Shop supplies .....	....	\$ 22.53	\$ 22.53	.00007
Surgeon and hospital.....	....	....	....	....
Total operating cost.....	\$4,896.31	\$3,611.13	\$8,507.44	.02429
March, 1900, was.....	\$4,777.63	\$3,320.28	\$8,097.91	.02424
March, 1899, was.....	5,545.67	3,107.43	8,653.10	.02742
March, 1898, was.....	5,678.90	3,444.40	9,123.30	.03050
March, 1897, was.....	6,221.01	3,241.21	9,462.22	.03541

Cash Cost of Operation—April, 1901.

Output this month, 297,758 K. W. Hours.

Output April, 1900, 279,953 K. W. Hours.

	Wages.	Stores.	Total.	Cost per. K. W. Hour.
Maintenance:				
Bldgs., track, dock, etc.....	\$ 30.52	\$ 2.50	\$ 33.02	....
Steam plant	37.82	76.58	114.40	....
Electric plant	52.56	81.73	134.29	....
Miscel. tools and mach'y....	36.96	12.00	48.96	....
Conduits	28.93	3.40	32.33	....
Towers and lamp posts.....	32.25	10.71	42.96	....
Arc lamps	186.20	81.15	267.35	....
Lines and cables.....	462.15	162.46	624.61	....
Total maintenance	\$ 867.39	\$ 430.53	\$ 1,297.92	.00436
Executive:				
Salary Sec'y and City Elec..	\$ 295.63	....	\$ 295.63	....
Printing and stationery.....	....	\$ 32.68	32.68	....
Store room	51.49	....	51.49	....
Office	65.00	15.86	80.86	....
Superintendence and drafting	155.00	....	155.00	....
Total executive	\$ 567.12	\$ 48.54	\$ 615.66	.00207
Station:				
Oils .....	....	\$ 74.07	\$ 74.07	.00025
Waste .....	..	19.81	19.81	.00007
Coal .....	....	\$1,660.44	\$1,660.44	.00555
Miscellaneous supplies .....	....	64.41	64.41	.00022
Wages	\$1,745.93	....	1,745.93	.00587
Total station	\$1,745.93	\$1,818.73	\$3,564.66	.01196
Lighting:				
Trimming and patrolling...	\$1,421.96	\$ 12.25	\$1,434.21	....
Carbons .....	....	578.66	578.66	....
Incand. lamp renewals.....	....	88.77	88.77	....
Incand. lighting expense....	16.91	22.81	39.72	....
Globes and nets.....	....	39.10	39.10	....
Miscellaneous supplies .....	....	2.43	2.43	....
Belle Isle Park.....	101.82	16.27	118.09	....
Total lighting	\$1,540.69	\$ 760.29	\$2,300.98	.00773
Shop supplies .....	....	\$ 9.02	\$ 9.02	.00003
Surgeon and hospital .....	....	....	....	....
Total operating cost.....	\$4,721.13	\$3,067.11	\$7,788.24	.02615
April, 1900, was.....	\$4,458.19	\$2,727.78	\$7,185.97	.02567
April, 1899, was.....	4,898.82	2,656.34	7,555.16	.02916
April, 1898, was.....	5,174.66	2,798.64	7,973.30	.03198
April, 1897, was.....	6,007.51	2,662.92	8,670.43	.03928

Cost of Operation—May, 1901.

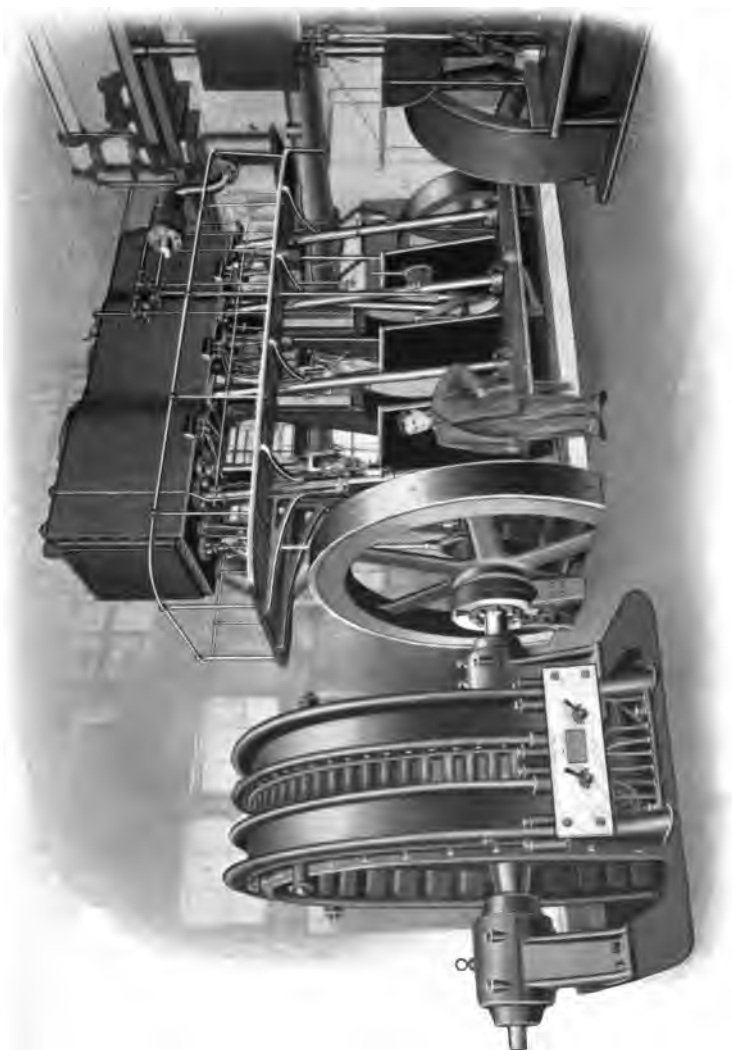
Output this month, 276,265 K. W. Hours.

Output May, 1900, 252,019 K. W. Hours.

	Wages.	Stores.	Total.	Per K. W. Hour.
Maintenance:				
Bldgs., track, dock, etc.....	\$ 55.03	\$.70	\$ 55.73	....
Steam plant	61.21	26.41	87.62	....
Electric plant	18.10	....	18.10	....
Miscel. tools and mach'y....	57.19	12.92	70.11	....
Conduits	57.12	28.59	85.71	....
Towers and lamp posts.....	17.43	1.90	19.33	....
Arc lamps	173.31	79.48	252.79	....
Lines and cables.....	400.75	84.44	485.19	....
Total maintenance	\$ 840.14	\$ 234.44	\$ 1,074.58	.00389
Executive:				
Saly. Sec'y and City Elect....	\$ 266.66	\$ 10.00	\$ 276.66	....
Printing and stationery.....	....	7.93	7.93	....
Store room	60.10	....	60.10	....
Office	65.60	6.21	71.81	....
Superintendence and drafting	155.00	.75	155.75	....
Total executive	\$ 547.36	\$ 24.89	\$ 572.25	.00207
Station:				
Oils	\$	\$ 72.68	\$ 72.68	.00026
Waste .....	....	21.60	21.60	.00007
Coal .....	....	1,564.08	1,564.08	.00566
Miscellaneous supplies .....	....	45.89	45.89	.00017
Wages	\$1,835.35	....	1,835.35	.00665
Total station	\$1,835.35	\$1,704.25	\$3,539.60	.01281
Lighting:				
Trimming and patrolling....	\$1,453.38	\$ 1.50	\$1,454.88	....
Carbons .....	....	532.64	532.64	....
Incand. lamp renewals.....	....	71.85	71.85	....
Incand. lgt. expense.....	11.87	1.80	13.67	....
Globes and nets.....	....	52.72	52.72	....
Misc. supplies .....	....	1.02	1.02	....
Belle Isle Park.....	140.84	19.74	160.58	....
Total lighting	\$1,606.09	\$ 681.27	\$2,287.36	.00828
Shop supplies .....	....	3.90	3.90	.00001
Surgeon and hospital.....	....	....	....	....
Total operating cost.....	\$4,828.94	\$2,648.75	\$7,477.69	.02706
May, 1900, was.....	\$4,514.57	\$2,804.71	\$7,319.28	.02904
May, 1899, was.....	4,531.61	2,553.57	7,085.18	.02951
May, 1898, was.....	5,195.46	2,585.75	7,781.21	.03476
May, 1897, was.....	5,658.29	2,377.02	8,035.31	.04102

Cash Cost of Operation—June, 1901.

				Cost
				Per K. W.
				Hour.
Output June, 1901.. 250,175 K. W. Hours				
Output June, 1900.. 224,222 K. W. Hours				
Maintenance:	Wages.	Stores.	Total.	
Bldgs., track, dock, etc.....	\$ 88.39	\$ 11.09	\$ 99.48	....
Steam plant	107.09	46.47	153.56	....
Electric plant	21.73	260.81	282.54	....
Misc. tools and mach'y.....	45.02	16.31	61.33	....
Conduits	3.37	.20	3.57	....
Towers and lamp posts.....	19.19	....	19.19	....
Arc lamps	128.01	52.44	180.45	....
Lines and cables.....	137.80	26.90	164.70	....
Total maintenance	\$ 550.60	\$ 414.22	\$ 964.82	.00386
Executive:				
Saly. Sec'y and City Elect....	\$ 266.66	\$	\$ 266.66	....
Printing and stationery.....	....	14.50	14.50	....
Store room	57.50	....	57.50	....
Office expense	71.20	23.90	95.10	....
Supt. and draughting.....	155.00	.70	155.70	....
Total executive	\$ 550.36	\$ 39.10	\$ 589.46	.00235
Station:				
Oils	\$	\$ 67.98	\$ 67.98	.00027
Waste .....	....	22.40	22.40	.00009
Coal .....	....	1,409.10	1,409.10	.00563
Miscellaneous supplies .....	....	15.59	15.59	.00007
Wages	1,695.59	....	1,695.59	.00678
Total station	\$1,695.59	\$1,515.07	\$3,210.66	.01284
Lighting:				
Trimming and patrolling....	\$1,400.26	\$	\$1,400.26	....
Carbons .....	....	506.63	506.63	....
Incand. lamp renewals.....	....	89.29	89.29	....
Incand. ltg. expense.....	23.48	10.70	34.18	....
Globes and nets.....	....	47.21	47.21	....
Miscellaneous supplies .....	....	1.40	1.40	....
Belle Isle Park.....	106.69	19.16	125.85	....
Total lighting	\$1,530.43	\$ 674.39	\$2,204.82	.00882
Shop supplies	\$	\$ 6.00	\$ 6.00	.00002
Surgeon and hospital.....	....	45.00	45.00	.00017
Total operating	\$4,326.98	\$2,693.78	\$7,020.76	.02806
June, 1900, was.....	\$4,728.83	\$3,005.06	\$7,733.89	.03449
June, 1899, was.....	4,108.93	2,160.42	6,269.35	.02907
June, 1898, was.....	5,041.76	2,082.89	7,124.65	.03615
June, 1897, was.....	5,592.81	2,452.40	8,045.21	.04567



1,000 H. P. TRIPLE SAMUEL F. HODGE ENGINE DIRECT CONNECTED TO 600 K. W. STANLEY ALTERNATOR.

Operating

FISCAL YEAR

	FIRST SIX MONTHS.		
	Wages.	Stores.	Total.
Maintenance:			
Buldings, track, dock, etc.....	\$ 224.54	\$1,051.58	\$1,276.12
Steam plant	593.03	883.60	1,476.63
Electric plant	229.68	296.13	525.81
Misc. tools and machinery.....	390.94	189.23	580.17
Conduits	104.32	11.53	115.85
Towers and lamp posts.....	1,110.78	730.66	1,841.44
Arc lamps	1,337.61	376.57	1,714.18
Lines and cables.....	2,423.72	987.67	3,411.39
Total maintenance	\$6,414.62	\$4,526.97	\$10,941.59
Executive:			
Salary Sec'y and City Electrician..	\$1,599.96	\$	\$1,599.96
Printing and stationery.....	....	661.01	661.01
Store room	488.10	2.12	490.22
Office	438.70	94.00	532.70
Superintendence and draughting...	917.50	82.80	1,000.30
Total executive	\$3,444.26	\$ 839.93	\$4,284.19
Station:			
Oils	\$	\$ 447.71	\$ 447.71
Waste .....	....	119.65	119.65
Coal .....	....	10,217.66	10,217.66
Miscellaneous supplies .....	....	572.68	572.68
Wages	10,795.67	....	10,795.67
Total station	\$10,795.67	\$11,357.70	\$22,153.37
Lighting:			
Trimming and patrolling.....	\$ 8,199.40	\$	\$ 8,199.40
Carbons .....	....	4,035.12	4,035.12
Incandescent renewals .....	....	771.31	771.31
Incandescent lighting expense....	114.24	29.49	143.73
Globes and nets.....	....	459.76	459.76
Miscellaneous supplies .....	....	136.71	136.71
Belle Isle Park.....	526.10	30.86	556.96
Total lighting	\$ 8,839.74	\$ 5,463.25	\$14,302.99
Shop supplies .....	....	38.75	38.75
Surgeon and hospital.....	25.37	148.15	173.52
Total operating	\$29,519.66	\$22,374.75	\$51,894.41
Year ending June 30, 1900.....	\$27,270.24	\$17,029.77	\$44,300.01
Year ending June 30, 1899.....	32,335.55	17,965.33	50,300.88
Year ending June 30, 1898.....	32,303.34	17,991.59	50,294.93
Year ending June 30, 1897.....	38,830.29	18,605.04	57,435.33

Disbursements.

ENDING JUNE 30, 1901.

—SECOND SIX MONTHS.—			—TOTAL FOR TWELVE MONTHS.—		
Wages.	Stores.	Total.	Wages.	Stores.	Total.
\$ 328.38	\$ 113.20	\$ 441.58	\$ 552.92	\$ 1,164.78	\$ 1,717.70
472.04	604.51	1,076.55	1,065.07	1,488.11	2,553.18
365.55	525.17	890.72	595.23	821.30	1,416.53
290.82	104.63	395.45	681.76	293.86	975.62
226.00	57.50	283.50	330.32	69.03	399.35
224.62	53.41	278.03	1,335.40	784.07	2,119.47
1,060.83	335.83	1,396.66	2,398.44	712.40	3,110.84
1,905.81	533.85	2,439.66	4,329.53	1,521.52	5,851.05
<hr/>			<hr/>		
\$ 4,874.05	\$ 2,328.10	\$ 7,202.15	\$ 11,288.67	\$ 6,855.07	\$ 18,143.74
<hr/>			<hr/>		
\$ 1,628.93	\$ 10.00	\$ 1,638.93	\$ 3,228.89	\$ 10.00	\$ 3,238.89
.....	193.96	193.96	.....	854.97	854.97
425.62	3.25	428.87	913.72	5.37	919.09
396.40	94.68	491.08	835.10	188.68	1,023.78
930.00	7.95	937.95	1,847.50	90.75	1,938.25
<hr/>			<hr/>		
\$ 3,380.95	\$ 309.84	\$ 3,690.79	\$ 6,825.21	\$ 1,149.77	\$ 7,974.98
<hr/>			<hr/>		
\$ \$ 424.89	\$ 424.89	\$ \$ 872.60	\$ 872.60	\$ \$ 872.60	\$ \$ 872.60
..... 124.72	124.72	..... 244.37	244.37	..... 244.37	244.37
..... 10,486.78	10,486.78	..... 20,704.44	20,704.44	..... 20,704.44	20,704.44
..... 439.11	439.11	..... 1,011.79	1,011.79	..... 1,011.79	1,011.79
10,626.31	..... 10,626.31	21,421.98	..... 21,421.98	..... 21,421.98	21,421.98
<hr/>			<hr/>		
\$ 10,626.31	\$ 11,475.50	\$ 22,101.81	\$ 21,421.98	\$ 22,833.20	\$ 44,255.18
<hr/>			<hr/>		
\$ 8,544.12	\$ 26.75	\$ 8,570.87	\$ 16,743.52	\$ 26.75	\$ 16,770.27
..... 3,798.40	3,798.40	..... 7,833.52	7,833.52	..... 7,833.52	7,833.52
..... 595.03	595.03	..... 1,366.34	1,366.34	..... 1,366.34	1,366.34
139.20	42.00	181.20	253.44	71.49	324.93
..... 233.66	233.66	..... 693.42	693.42	..... 693.42	693.42
..... 37.14	37.14	..... 173.85	173.85	..... 173.85	173.85
606.52	68.01	674.53	1,132.62	98.87	1,231.49
<hr/>			<hr/>		
\$ 9,289.84	\$ 4,800.99	\$ 14,090.83	\$ 18,129.58	\$ 10,264.24	\$ 28,393.82
..... 69.63	69.63	..... 108.38	108.38	..... 108.38	108.38
25.00	20.00	45.00	50.37	168.15	218.52
<hr/>			<hr/>		
\$ 28,196.15	\$ 19,004.06	\$ 47,200.21	\$ 57,715.81	\$ 41,378.81	\$ 99,094.62
<hr/>			<hr/>		
\$ 27,626.90	\$ 18,160.82	\$ 45,787.72	\$ 54,897.14	\$ 35,190.59	\$ 90,087.73
29,958.75	16,405.40	46,364.15	62,294.30	34,370.73	96,665.03
31,705.88	17,991.59	49,418.25	64,009.33	35,703.85	99,713.18
35,920.53	16,785.52	52,706.05	74,750.82	35,390.56	110,141.38

Comparison of Wages Paid in Operating Expenses.

For years ending June 30.

Account.

Maintenance:	1901.	1900.	1899.
Buildings, track, wharf, etc.....\$	552.92	\$ 487.10	\$ 783.47
Steam plant	1,065.07	1,577.95	1,212.72
Electric plant	595.23	549.45	1,117.89
Miscel. tools, machinery, etc...	681.76	780.18	663.03
Conduits	330.32	584.68	463.71
Towers and lamp posts.....	1,335.40	1,047.36	893.57
Arc lamps	2,398.44	1,659.00	3,508.99
Lines and cables.....	4,329.53	3,388.93	3,512.62
Total maintenance	\$11,288.67	\$10,074.65	\$12,156.00
Executive:			
Salary Sec'y and City Electr....\$	3,228.89	\$ 3,666.58	\$ 3,799.92
Printing and stationery.....			
Store room	913.72	963.16	847.81
Clerks and office expense.....	835.10	1,492.17	1,562.45
Civil engineer and draughting..	1,847.50	1,184.76	1,179.92
Total executive	\$ 6,825.21	\$ 7,306.67	\$ 7,390.10
Station:			
Oils	\$	\$	\$
Waste			
Coal			
Miscellaneous supplies			
Wages	21,421.98	20,968.70	21,469.63
Total station	\$21,421.98	\$20,968.70	\$21,469.63
Lighting:			
Trimming and patrolling.....\$	16,743.52	\$15,243.86	\$19,763.17
Carbons			
Incand. lamp renewals.....			
Incand. lighting expense.....	253.44	252.99	296.92
Globes and nets.....			
Miscellaneous		19.82	27.87
Belle Isle Park.....	1,132.62	880.70	1,128.61
Total lighting	\$18,129.58	\$16,397.37	\$21,216.57
Shop expense	\$	\$	\$
Injuries and damages.....	50.37	149.75	62.00
Total wages paid.....	\$57,715.81	\$54,897.14	\$62,294.36

Comparison of Operating Expenditures for Stores.

For years ending June 30.

Account.

Maintenance:	1901.	1900.	1899.
Buildings, track, wharf, etc....\$	1,164.78	\$ 222.78	\$ 356.28
Steam plant	1,488.11	1,034.70	1,434.15
Electric plant	821.30	329.92	239.13
Miscl. tools and machinery.....	293.86	207.58	377.32
Conduits	69.03	51.01	55.77
Towers and lamp posts.....	784.07	557.31	52.54
Arc lamps	712.40	722.49	1,201.64
Lines and cables.....	1,521.52	1,260.68	1,540.76
Total maintenance	\$ 6,855.07	\$ 4,386.47	\$ 5,257.59
Executive:			
Salary Sec'y and City Electr..\$	10.00	\$	\$
Printing and stationery.....	854.97	551.84	517.16
Store room	5.37	6.13	37.70
Clerks and office expense.....	188.68	341.71	193.68
Civil engr. and draughting.....	90.75	117.56	33.49
Total executive	\$ 1,149.77	\$ 1,017.24	\$ 782.03
Station:			
Oils	\$ 872.60	\$ 1,024.97	\$ 994.99
Waste	244.37	246.21	235.05
Coal	20,704.44	16,127.59	17,873.34
Miscellaneous supplies	1,011.79	1,037.61	678.97
Wages .....	.....	.....	.....
Total station	\$22,833.20	\$18,436.38	\$19,782.35
Lighting:			
Trimming and patrolling.....\$	26.75	\$ 191.26	\$ 76.29
Carbons	7,833.52	8,017.60	6,295.98
Incand. lamp renewals.....	1,366.34	1,352.95	912.80
Incand. lighting expense.....	71.49	176.31	47.98
Globes and nets.....	693.42	788.91	517.02
Miscellaneous supplies	173.85	248.16	185.25
Belle Isle Park.....	98.87	140.29	93.17
Total lighting	\$10,264.24	\$10,915.48	\$ 8,128.49
Shop expense	\$ 108.38	\$ 136.17	\$ 122.17
Injuries and damages.....	168.15	298.85	298.10
Total supplies	\$41,378.81	\$35,190.59	\$34,370.73

Comparison of Total Operating Expenses.

For years ending June 30.

Account.

Maintenance:	1901.	1900.	1899.
Buildings, track, wharf.....	\$ 1,717.70	\$ 709.88	\$ 1,139.75
Steam plant	2,553.18	2,612.65	2,646.87
Electric plant	1,416.53	879.37	1,357.02
Miscl. tools and machinery.....	975.62	987.76	1,040.35
Conduits	399.35	635.69	519.48
Towers and lamp posts.....	2,119.47	1,604.67	946.11
Arc lamps	3,110.84	2,381.49	4,710.63
Lines and cables.....	5,851.05	4,649.61	5,053.38
Total maintenance	\$ 18,143.74	\$14,461.12	\$17,413.59
Executive:			
Salary Sec'y and City Electr....	\$ 3,238.89	\$ 3,666.58	\$ 3,799.92
Printing and stationery.....	854.97	551.84	517.16
Store room	919.09	969.29	885.51
Clerks and office expense.....	1,023.78	1,833.88	1,756.13
Civil engr. and draughting.....	1,938.25	1,302.32	1,213.41
Total executive	\$ 7,974.98	\$ 8,323.91	\$ 8,172.13
Station:			
Oils	\$ 872.60	\$ 1,024.97	\$ 994.99
Waste	244.37	246.21	235.05
Coal	20,704.44	16,127.59	17,873.34
Miscellaneous supplies	1,011.79	1,037.61	678.97
Wages	21,421.98	20,968.70	21,469.63
Total station	\$44,255.18	\$39,405.08	\$41,251.98
Lighting:			
Trimming and patrolling.....	\$16,770.27	\$15,435.12	\$19,839.46
Carbons	7,833.52	8,017.60	6,295.98
Incand. lamp renewals.....	1,366.34	1,352.95	912.86
Incand. lighting expense.....	324.93	429.30	344.90
Globes and nets.....	693.42	788.91	517.02
Miscellaneous supplies	173.85	267.98	213.12
Belle Isle Park.....	1,231.49	1,020.99	1,221.78
Total lighting	\$28,393.82	\$27,312.85	\$29,345.06
Shop expense	\$ 108.38	\$ 136.17	\$ 122.17
Injuries and damages.....	218.52	448.60	360.10
Total operating expense.....	\$99,094.62	\$90,087.73	\$96,665.03

Financial Statement.

April 4, 1893; to June 30, 1901.

Covering Existence of the Commission.

Appropriations and Receipts—

From City of Detroit:

Balance of lighting fund of 1893.....	\$ 8,226.20
From contingent fund, 1893.....	25,000.00
From bond issue, 1893.....	600,000.00
From bond issue, 1896.....	50,000.00
From taxes levied prior to 1893.....	4,379.89
From taxes levied 1893.....	175,000.00
From taxes levied 1894.....	174,362.44
From taxes levied 1895.....	158,278.27
From taxes levied 1896.....	150,000.00
From taxes levied 1897.....	204,780.00
From taxes levied 1898.....	79,000.00
From taxes levied 1899.....	136,945.00
From taxes levied 1900.....	96,000.00

Total from City of Detroit.....	\$1,861,971.89
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From other sources:

From Inspection Department.....	\$ 13,180.50
From work and material supplied other city de- partments	14,132.49
From sale of old material.....	5,533.86
From rent conduits, poles, etc.....	5,769.64
From lighting public buildings.....	16,089.33
From accounts payable.....	3,899.11
From conscience fund.....	35.00

Total from other sources.....	\$ 58,639.93
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Grand total appropriations and receipts....	\$1,920,611.82
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Disbursements—

Investment accounts:

Real estate	\$ 63,125.00
Conduits	92,383.43
Cables	55,370.15
Buildings and wharf.....	110,204.96
Lines and poles.....	144,633.07
Towers and lamp posts.....	97,755.04
Arc plant	60,949.12
Incandescent plant	13,631.84
Steam plant	112,630.92
Railway track and scales.....	10,982.31
Machine shop	8,014.16
Arc lamps and switches.....	55,678.62
Belle Isle	26,296.21

Total amount expended for investment.....	\$ 851,654.83
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Financial Statement—Continued.**Disbursements continued.**

Amount brought forward	\$ 851,654.83
Operating expenses:	
City lighting expense from April 4, 1893, to June 30, 1896:	
Office expense	\$ 17,853.51
Advertising	319.16
Public lighting from private companies....	381,459.72
Fuel	17,162.20
Carbons	8,741.79
Pay rolls	56,178.13
Printing and stationery.....	403.12
General supplies	4,366.37
Oil and rags.....	1,637.85
Teaming	2,192.60
Incandescent lamps	432.42
Globes and nets.....	676.93
	<hr/>
	\$ 491,423.80
Operating expense 12 months to June 30, 1897.	\$ 110,141.38
Operating expense 12 months to June 30, 1898.	99,713.18
Operating expense 12 months to June 30, 1899.	96,665.03
Operating expense 12 months to June 30, 1900.	90,087.73
Operating expense 12 months to June 30, 1901.	99,094.62
Cost of labor and material for other city de- partments	12,687.59
Inspection department	11,905.50
Increase of stores.....	4,074.03
Work on City Hall tower.....	612.38
Work done for Detroit Boat Club.....	654.08
Accounts receivable	651.48
Taxes charged back, 1893.....	\$ 1,487.28
Taxes charged back, 1894.....	2,525.59
Taxes charged back, 1895.....	3,063.44
Taxes charged back, 1896.....	3,421.58
Taxes charged back, 1897.....	12,469.86
	<hr/>
	\$ 22,967.75
Total disbursements	\$1,892,333.38
Total appropriations and receipts.....	1,920,611.82
	<hr/>
Excess of appropriations and receipts....	\$ 28,278.44
Balance June 30, 1901:	
City Treasurer	\$ 27,279.61
Secretary	998.83
	<hr/>
	\$ 28,278.44

Receipts and Disbursements

Twelve months to June 30th, 1901.

Receipts—

From taxes year of 1900 (entire appropriation)..	\$ 96,000.00
From incandescent lighting for other depts....	2,120.08
From sale of old material.....	446.61
From rental of poles, conduits, etc.....	1,544.30
From inspection department	2,901.05
From work done other departments.....	2,166.11
From decrease in stores on hand.....	1,455.00
	<hr/>
Total receipts	\$ 106,633.15

Disbursements:

For 12 months operating expense.....	\$ 99,094.62
For 12 months construction expense.....	23,566.83
For 12 months inspection department expense..	2,266.64
For 12 months foreign work.....	1,420.53
For decrease in accounts payable.....	8,562.48
	<hr/>
Total disbursements	\$ 134,911.10
	<hr/>
Excess disbursements	\$ 28,277.95

Cash balances June 30th, 1900, were:

City Treasurer.....	\$ 54,774.76
Secretary	1,781.63
	<hr/>
	\$ 56,556.39

Cash balances June 30, 1901, should amount to.. \$ 28,278.44

Cash balances June 30, 1901, are:

City Treasurer	\$ 27,279.61
Secretary	998.83
	<hr/>
	\$ 28,278.44

Trial Balance.

June 30, 1901.

Detroit Boat Club.....	\$ 654.08	
Commercial National Bank.....	651.48	
Will F. Conant.....		\$ 110.27
Petty cash	998.83	
Appropriation balance July 1, 1901.....		146,825.26
City Treasurer, cash.....	27,279.61	
Incandescent lighting		2,120.08
Sale of old material.....		446.61
Rentals		1,544.30
Pay rolls	62,777.66	62,777.66
Inspection department disbursements.....	2,266.64	
Inspection department receipts.....		2,901.05

Investment accounts:

Conduits	\$ 1,658.26	
Belle Isle	113.41	
Buildings, tracks and dock.....	200.46	
Lines	3,297.80	
Cables	17,073.68	
Towers and lamp posts.....	218.50	
Steam plant	781.05	
Electric plant, Arc.....	58.39	
Electric plant, Incandescent.....	149.68	
Arc lamps	15.60	
	<hr/>	23,566.83

Operating accounts:

Maintenance:

Conduits	\$ 399.35	
Buildings, track, dock., etc.....	1,717.70	
Steam plant	2,553.18	
Electric plant	1,416.53	
Miscellaneous tools and machinery.	975.62	
Towers and lamp posts.....	2,119.47	
Arc lamps	3,110.84	
Lines and cables.....	5,851.05	
	<hr/>	18,143.74

Executive:

Salary Sec'y and City Electrician....	\$ 3,238.89	
Printing and stationery.....	854.97	
Store room	919.09	
Office	1,023.78	
Engineering and superintendence..	1,938.25	
	<hr/>	7,974.98

Amounts carried forward.....\$144,313.85 \$216,726.15

Trial Balance—June 30, 1901—Continued.

Amounts carried forward.....\$144,313.85 \$216,726.15

Station:

Oils	\$ 872.60	
Waste	244.37	
Coal	20,704.44	
Miscellaneous supplies	1,011.79	
Wages	21,421.98	
	<hr/>	44,255.18

Lighting:

Trimming arcs and patrolling.....	\$16,770.27	
Carbons	7,833.52	
Incandescent renewals	1,366.34	
Incandescent lighting expense....	324.93	
Globes and nets.....	693.42	
Miscellaneous	173.85	
Belle Isle Park.....	1,231.49	
	<hr/>	28,393.82

Shop supplies	108.38	
Surgeon and hospital.....	218.52	
Foreign work, disbursements.....	1,420.53	
Foreign work, receipts.....		2,269.24

Supplies in stock:

Carbons	\$ 3,431.82	
Coal	53.93	
Incandescent lamps	307.13	
Oils	22.23	
Waste	28.07	
Globes and nets.....	223.47	
Trans. ropes	
Dynamo brushes	7.38	
	<hr/>	4,074.03

Accounts payable		3,788.84
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	<hr/>	\$222,784.31 \$222,784.31
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Balance Sheet.

Books closed June 30, 1901.

Detroit Boat Club.....	\$	654.08	
Commercial National Bank.....		651.48	
Petty cash balance.....		998.83	
Appropriation balance			\$28,910.21
Cash balance, City Treasurer.....	27,279.61		
Will F. Conant.....			110.27
Foreign work balance.....			848.71

Supplies in stock:

Waste	\$	28.07	
Carbons	3,431.82		
Coal	53.93		
Incandescent lamps	307.13		
Oils	22.23		
Globes and nets.....	223.47		
Dynamo brushes	7.38		
Accounts payable		4,074.03	3,788.84
		<u>\$33,658.03</u>	<u>\$33,658.03</u>

Assets and Liabilities.

June 30, 1901.

Assets—

City Treasurer's cash balance.....	\$27,279.61	
Secretary's cash balance.....	998.83	
Accounts receivable	4,697.06	
Stores on hand.....	4,074.03	
	<u></u>	
Total assets		\$37,049.53

Liabilities—

Accounts payable		\$ 3,788.84
		<u></u>
Excess of assets.....		\$33,260.69

Office of the Public Lighting Commission.

Detroit, August 20, 1901.

Hon. David W. Simons,
President Public Lighting Commission,
Detroit, Mich.

Dear Sir:—

This is to certify that the disbursement vouchers of the Commission for the fiscal year ending June 30, 1901, have been examined by the Auditing Committee and approved.

JAMES E. DAVIS,
E. H. McCURDY,
Auditing Committee.

Office of the City Treasurer.

Detroit, July 19, 1901.

Hon. David W. Simons,
President Public Lighting Commission,
Detroit, Mich.

Dear Sir:—

The books of this office show that for the fiscal year ending June 30, 1901, the receipts and disbursements for the account of the Public Lighting Commission have been as follows:

Balance July 1, 1900.....	\$ 54,774.76
Receipts from sundry sources.....	111,618.08

Total	\$166,392.84
Total vouchers paid.....	139,113.23

Balance June 30, 1901.....	\$ 27,279.61
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Yours respectfully,

WM. B. THOMPSON,
City Treasurer.

Office of the Public Lighting Commission.

STATE OF MICHIGAN, }
County of Wayne, } ss.

Frank T. Bowler, Secretary of the Public Lighting Commission, being duly sworn, says that the accounts of the Public Lighting Commission have been examined and verified by him from April 4, 1893, to June 30, 1901, and that the statements published herewith are drawn correctly from the books of the Commission.

(Signed) FRANK T. BOWLER.

Subscribed and sworn to before me
this 20th day of August, 1901.

W. J. NAGEL,
Notary Public, Wayne Co., Mich.

Detroit, June 30, 1901.

Hon. David W. Simons,
President Public Lighting Commission,
Detroit, Mich.

Dear Sir:—

I have examined the books of the Commission for the fiscal year ending this date, and find them as follows:

Receipts—

From taxes year of 1900 (entire appropriation)...	\$96,000.00	
From incandescent lighting for other departments	2,120.08	
From sale of old material.....	446.61	
From rental of poles, conduits, etc.....	1,544.30	
From inspection department	2,901.05	
From work done other departments.....	2,166.11	
From decrease in stores on hand.....	1,455.00	
	<hr/>	
Total receipts		\$106,633.15

Disbursements—

For 12 months' operating expense.....	\$99,094.62	
For 12 months' construction expense.....	23,566.83	
For 12 months' inspection department expense...	2,266.64	
For 12 months' foreign work expense.....	1,420.53	
For decrease in accounts payable.....	8,562.48	
	<hr/>	
Total disbursements		\$134,911.10
		<hr/>
Excess disbursements		\$ 28,277.95

Cash balances June 30, 1900, were:

City Treasurer	\$54,774.76	
Secretary	1,781.63	
	<hr/>	\$ 56,556.39
		<hr/>
Cash balance June 30, 1901, should amount to....		\$ 28,278.44
Cash balances June 30, 1901, are:		
City Treasurer	\$27,279.61	
Secretary	998.83	
	<hr/>	\$ 28,278.44

I have the honor to be,

Yours very truly,
FRANCIS J. DUCAT,
City Accountant.

Office of the Public Lighting Commission,
Detroit, February 5, 1901.

To the Honorable,
The Controller,
City of Detroit.

Dear Sir:—

Complying with your request, we respectfully submit the following estimate of what funds will be required for the fiscal year ending June 30, 1902.

Operation of the Present Plant:

10,000 tons of coal, at \$2.50 per ton.....	\$ 25,000.00
Removing ashes	300.00
Oils, waste, etc.....	1,600.00
700,000 pairs carbons, at \$12 per thousand pairs.....	8,400.00
Incandescent lamp renewals.....	1,500.00
Maintenance of buildings, track, dock, etc.....	250.00
Maintenance of steam plant.....	1,500.00
Maintenance of electric plant.....	600.00
Maintenance of arc lamps.....	500.00
Maintenance of outside wiring, lines and cables.....	500.00
Maintenance of conduits and towers.....	200.00
Miscellaneous incandescent lighting expense.....	200.00
Repairs to buildings, painting stack, rebuilding ashpit, repairs to track and scales.....	1,000.00
Repairs to boilers and engines.....	1,500.00
Repairs to electric plant, dynamos and wiring.....	1,000.00
Repairs to arc lamps, changing and cleaning.....	1,000.00
Rebuilding lines	2,500.00
Rebuilding conduits and towers.....	2,000.00
Wages	55,000.00

Total operation, maintenance and repairs.....\$104,550.00

Betterment and Extension of the Present System:

Underground—

To place on the underground system 18 lamps now wired overhead, including new laterals, cables and lamp posts..\$ 2,840.00

Extensions to the lighting system—

407 arc lamp extensions in most important locations.....	22,271.00
Cost of operating 407 lamps nine months at rate of \$42.70 per annum	13,034.16
100 additional arc lamps.....	5,400.00
Operating same nine months.....	3,202.50
Conduits and cables, required in half mile circle from Beau-bien street conduit, Randolph street to Cadillac square, to Bates street, also on Washington avenue, between State and Park; also on Randolph from Larned to Wood-bridge, 29,790 duct feet and 13 manholes at 32 cents; and 102,455 feet of cable at 16 cents.....	25,925.60

Belle Isle Park—	
6,000 feet conduit.....	1,500.00
20,000 feet cable.....	3,200.00
Addition to the transformer house.....	700.00
Incandescent lines to new buildings.....	500.00
14 iron lamp posts at \$50.....	700.00
Palmer Park extension—	
Feeder only	800.00
Extension incandescent system—	
Running feeder to 7 schools, 7 fire engine houses and 2 police stations in west end of city.....	5,628.00
Operating 1,382 lights in above 16 buildings.....	1,000.00
Station betterment—	
Net cost of changing one triple engine set and four arc dynamos to alternator direct connected to same engine to operate both incandescent and arc lighting service.....	10,000.00
Total	\$ 96,701.26
Total estimate	\$201,251.26
We have the honor to be,	

Yours respectfully,

D. W. SIMONS,
E. H. McCURDY,
JAMES E. DAVIS,
FREDERICK F. INGRAM,
JOHN ERHARD,
HAMILTON CARHARTT,
Commissioners.

Office of the City Controller,
Detroit, June 29, 1901.

To the Honorable,
The Public Lighting Commission.

Gentlemen:—

The Board of Estimates of the City of Detroit, after considering the estimates submitted by the Public Lighting Commission for the operation and maintenance of the present plant for the fiscal year ending June 30, 1902, and for the improvements and extensions of the public lighting system, granted the following:

For operation and maintenance of the present plant.....	\$ 98,000.00
Arc and incandescent lighting extension.....	45,328.00
Station betterment	10,000.00
Total appropriation	\$153,328.00

Respectfully yours,
F. A. BLADES,
City Controller.

APPENDIX.

Public Lighting Act.

AN ACT to amend an act, entitled "An act to provide a charter for the city of Detroit, and to repeal all acts and parts of acts in conflict therewith," approved June 7, 1883, by adding a new chapter thereto.

Section 1. The People of the State of Michigan enact, That an act entitled "An act to provide a charter for the city of Detroit, and to repeal all acts and parts of acts in conflict therewith," approved June 7, 1883, be and the same is hereby amended by adding a new chapter thereto to be known as chapter thirteen, to read as follows:

CHAPTER XIII.

Section 1. There shall be a board of commissioners in said city known as the public lighting commission. Said commission shall consist of six members, who shall be appointed by the mayor and approved by the common council. The first appointment of members of this commission shall be made at the next meeting of the common council after this chapter shall have become operative, and the first appointments shall be made for the terms respectively of one, two, three, four, five and six years, and the members so appointed shall hold office until their successors are appointed and shall have qualified. Their successors shall be appointed at the termination of said respective terms for the term of six years. Said commissioners shall take and file in the office of the city clerk the oath of office prescribed for city officers, and shall then enter upon the performance of their duties. They shall appoint their president and secretary, who shall perform the duties usually appertaining to such offices and such as shall be prescribed by said board. The president of said board shall be ex-officio a member of the board of estimates. Said board of commissioners shall have authority to call upon the city surveyor for any services they may require in making maps or diagrams of locations of lights and wires within the city limits, and the city clerk and board of public works shall furnish them such information as they may require for the proper discharge of their duties.

Sec. 2. The said city may contract for the lighting of public buildings, streets, avenues, parks, public grounds and places for any period not exceeding three years. It shall have power to procure lands, and purchase or construct the necessary buildings, engines, dynamos, and other machinery, tools, lamps, lines, conduits, poles, towers and other apparatus and appliances constituting a plant for lighting the said city by electricity or by any other means or system, and if the common council deem it desirable it may purchase towers, poles, wires, lamps and other appliances, and cause lines of wire to be constructed, the use of which it may let to any persons or corporation contracting to light said city. It shall also have power to lay pipes and conduits in the highways, alleys and public places, for gas or electric light wires, and to erect in the highways, alleys and public places, poles, towers, or posts for wires or lamps and to place, construct and maintain the necessary lines of wires, either below or above ground, in the highways, alleys or public places: Provided, That nothing in this act shall be construed as granting said municipality or said board the right to engage in the business of private or commercial lighting.

Sec. 3. If the common council shall determine to contract for lighting, it shall by resolution direct the public lighting commissioners to enter into a contract for lighting said city, either by electricity or by such other means as it may determine, for a period of time to be mentioned in such resolution. It shall thereupon be the duty of said commissioners to prepare specifications and advertise for proposals for a period of not less than five days, and enter into a contract in behalf of said city with the lowest responsible bidder, for lighting said city by such means as are specified in such resolution: Provided, It shall be competent for the commissioners to contract for lighting the public buildings and any part or portion of the city by different means or systems.

Sec. 4. If the common council shall determine that it is advisable to establish a plant for public lighting, to be owned by the city, it may direct said commissioners to purchase the necessary lands, machinery, wires, poles, lamps, towers and other

apparatus and appliances mentioned in the second section of this chapter the cost of which shall not exceed eight hundred thousand dollars. And it shall thereupon be the duties of said commissioners without further approval or confirmation of their contracts by the common council, to carry into effect the authority thereby conferred, and to make the necessary purchase of lands, machinery, engines, tools, lamps, apparatus and appliances, and construct the buildings required and cause to be constructed or laid all necessary conduits and lines of wire below ground, and to erect and construct all necessary poles, towers, posts, lines of wire above ground, which they shall deem necessary or required according to such system or systems as they may deem best for the lighting of said city. (As amended January 17, 1895.)

Sec. 5. The said commissioners may employ an electrical engineer, who shall be known as the city electrician, and such other superintendents, engineers, clerks, agents and subordinates under them as may be necessary to carry into effect the provisions of this chapter, regulate and define their duties and prescribe their compensation.

Before the common council shall direct said commissioners to establish a plant as herein provided, it shall by resolution submit to the electors of said city, to be voted upon by said electors, the question as to whether the authority hereby conferred shall be exercised. The proposition shall be stated upon the ballots to be printed by the election commissioners, in the following form: "For a city lighting plant—Yes," and the same words repeated followed by the word "No," and any elector may vote for or against said proposition by marking a cross opposite said words "Yes" or "No," respectively. The votes upon said proposition and for and against the same, respectively, shall be certified, returned and canvassed by the board of city canvassers in the manner now provided by law for certifying, returning and canvassing votes cast for city officers. And if a majority of the electors voting thereon in said city shall vote in favor of said proposition then the authority hereby conferred may be exercised; otherwise the same shall not be so exercised. Notice shall be given by the city clerk by publication in four or more newspapers of the election to vote upon said proposition at least five days before the election.

Sec. 6. The said commissioners shall have a general supervision and management of all public lighting, and of any plant established by the city, as herein provided for that purpose, and all employes engaged in or about the construction or operation thereof, and shall make the necessary purchase of fuel, tools, supplies, materials, apparatus and appliances required in the operation and management of said plant, without further approval or confirmation of their contracts by the common council: Provided, That the expenditures for the operation and management of said plant shall not exceed in any one year the tax levied for that purpose: And provided further, That after the adoption by them of plans and specifications for the erection of any buildings, the board of public works shall have the immediate supervision or superintendence of construction thereof, and also of the laying of conduits in the public streets, and of the necessary excavation, refilling and repaving caused thereby. (As amended January 17, 1895.)

Sec. 7. The said city may raise by tax the necessary funds to provide for the public lighting and for the purpose of providing for the construction of the public lighting plant, as herein provided, may raise moneys by tax or issue the bonds of said city, payable at such times and in such amount and at such rates of interest as the common council may determine, subject, however, to the approval of the board of estimates as provided by section 4, chapter 8, of act number 488 of the public acts of 1887. It shall also have power to issue bonds in like manner or raise moneys by tax for the purchase or construction of conduits, wires, posts, poles, towers and lamps, for use by any party or parties contracting for the public lighting as herein provided.

Sec. 8. No contract shall be let nor any purchase be made of any lands or property requiring the payment of any money, nor shall any moneys be paid for public lighting in excess of the tax levied for that purpose or of moneys raised by issuing bonds as herein provided.

Sec. 9. The public lighting commissioners shall have the supervision of the construction of all the electric lighting lines of wires in said city whether owned by the city or by other parties, and of all connections made with any building or buildings, and no such wires or lines of wire shall be placed, laid, erected or constructed, nor shall any pole or post or conduit be laid, placed or constructed for such lines, nor any connection made with any building or buildings, except under such general regulations as they from time to time may adopt. They may prescribe the limits of the

district or districts in said city, within which it shall not be lawful to erect poles and train wires for such lines above ground in any street or highway, and they may prescribe or determine the other street or streets in which it may be lawful to erect or construct such lines of wire above ground. Any person violating the provisions of this section shall be deemed guilty of a misdemeanor and shall be punished accordingly.

Sec. 10. The common council shall have power to adopt ordinances not in conflict herewith, to carry out the provisions of this chapter and to regulate the use of electricity for lighting purposes in said city, and the training or using of wires therefor, and to regulate or prohibit the erection of poles in the streets of said city for such wires, or the training thereof.

Sec. 11. Any person who shall cut, break, injure or destroy any building, engine, dynamo or other machinery, or appliances, poles, posts, towers, lamps, wires, or conduits erected, constructed or used for the public lighting of said city, whether owned by the corporation or by any party or parties contracting for the lighting of said city, with intent to prevent or interrupt the lighting of any public building, or any part or portion of said city, shall be deemed guilty of a misdemeanor, and shall be punished therefor by a fine of not less than twenty-five dollars nor more than one thousand dollars, or by imprisonment not exceeding two years, or by both fine and imprisonment in the discretion of the court, and proof that the acts was willful shall be prima facie evidence of such intent.

This act is ordered to take immediate effect.

Approved March 18th, 1893.

General Lighting Ordinance.

A GENERAL ORDINANCE authorizing the granting of permission to construct, maintain and operate poles, conduits, wires or other conductors for the purpose of furnishing electric lighting in the City of Detroit.

It is hereby ordained by the People of the City of Detroit:

Section 1. That any person or corporation carrying on a manufacturing business in the City of Detroit, and having surplus power applicable to the purpose, may apply to and receive a permit from the Public Lighting Commission to lay conduits, erect poles and place thereon or therein wires or other conductors for the purpose of furnishing electric lighting to any person or persons desiring the same, and within the district to be designated in the application to be made for such permit. Said Public Lighting Commission is hereby authorized to grant such permits for the laying of conduits, erection of poles, placing of wires or conductors thereon in the streets, alleys or other highways of the city; subject, however, to the conditions and restrictions imposed by this ordinance, and all other general ordinances now in force or which may hereafter be adopted concerning the same.

Sec. 2. The person or corporation to whom such permit shall be granted shall do no injury to any street, avenue, alley, lane, park or public square, or to any shade trees, or in any manner disturb or interfere with any water or gas pipes, or with any public or private sewer now or hereafter laid or constructed by any authorized person, persons or corporations, or the wires and conduits of any telephone, telegraph or electric lighting or street railway company, or of the police, fire or lighting commission, and shall fully indemnify and save harmless the City of Detroit from any and all claims or damages for which said city might be made or become liable to pay by reason of the construction, maintaining, repairing or operating of said poles, conduits, wires, lamps or other conductors, or any apparatus connected therewith or otherwise arising from the use or possession of the rights and privilege granted, or from any neglect on the part of said corporation or person or its or his employees to comply with any of the ordinances of the City of Detroit, and especially shall indemnify the city against and assume all liability and damages which may arise, come or occur to the City of Detroit from any injury to persons or property from the doing of any work herein mentioned, or the neglect of any person or company or its em-

ployes to comply with any ordinance relative to the use of streets, or other public places, especially as to the putting up of lights or barriers at or around excavations, and the acceptance by the person, persons or corporation of such permit of this ordinance shall be an agreement by it to pay to the City of Detroit any sum of money for which the city may become liable from or by reason of such injury.

Sec. 3. All poles erected under such permit shall be firmly set in the ground next to and within the curbstone, so as to cause the least obstruction, in such manner and of such uniform height, size, color and material as shall be approved or designated by the Public Lighting Commission and the Board of Public Works.

Sec. 4. All operating and conducting mains and wires of any such person, persons or corporation shall be thoroughly and securely insulated with a material of sufficient thickness and durability to protect them from abrasion and other mechanical injury, and impervious to water, to be approved by the Public Lighting Commission, and when laid beneath the surface of the ground, all conduits shall be laid in streets and avenues in a line parallel with the curb line thereof, at such distance from the curbstone, or where the curbstone should be as shall be designated by the Board of Public Works, and to a depth not exceeding two feet. It is especially required that all service wire used by such person, persons or corporation shall be connected only with a main laid in a conduit in the alley or at the side of the street nearest to the building into which it is desired to conduct such service wires.

Sec. 5. At least twenty-four hours before opening or excavating in any street, alley or any public space for the above or for any other purpose, said person, persons or corporation shall notify the Board of Public Works in writing of such desire, stating the place where and the object for which said opening is to be made, and obtain the permit of said board, and in the opening and refilling of all openings and excavations made as aforesaid, the relaying of the pavements and other works necessary to the complete restoration of the streets, pavements, sidewalks or ground to equally good condition as when disturbed, the said person, persons or company or its servants or employes shall be under the supervision of the Board of Public Works or its authorized agents, and shall promptly comply with any order or resolution of said board or its agents, or of the Common Council, in reference thereto. Nor shall any street, avenue or public space be allowed to remain open or incumbered for a longer period than shall be necessary to execute the work for which the same has been opened. And the Board of Public Works or the Common Council may determine the question of such necessity.

The earth removed in making such excavation shall be restored and the pavement be relaid by said person or corporation in as good a condition as before the making of such excavation, and thereafter be maintained in as good condition as the surrounding pavement until the street or alley in each case is repaved. No excavation in any street, alley or public place shall be allowed to remain open or said street, alley or public place be encumbered for a longer period than shall be necessary to execute the work for which the same is made.

The cost of restoring the earth or otherwise, arising from such excavations and the laying of the pavements and repairs thereto, caused by the opening of any such street, alley or public place, shall be paid by said person or corporation, and said work shall be done under the supervision of the Board of Public Works, and the expense of such supervision shall be paid by said company, on presentation of bills, certified by said board, and any expense to which the city shall be put from neglect of said company or its employes in the doing of any work, or the doing of the same in an unworkmanlike manner, of the digging of ditches or holes and erection of poles, or restoring the earth or any excavation, or relaying or replacing of any pavement, shall be paid in like manner by said company on presentation of the bills of cost certified by said board, and it shall be the duty of said person or corporation in each instance to promptly pay all bills for labor and material, supervision, etc., incurred by the Board of Public Works in relaying and restoring any pavement or surface disturbed by said person, persons or corporation, and if said bills, properly certified by the Board of Public Works, remain unpaid for the space of thirty (30) days after the presentation to said person or corporation, it shall be the duty of the Board of Public Works to pay over to the credit of the proper fund the amount of any bills so remaining unpaid from the guaranty money deposited by said person or corporation with said board, and on refusal, neglect or failure by said person, persons or corporation to make such guaranty money good to its full extent as herein first named prior to the next meeting of the Common Council, the Board of Public Works shall report the facts in the case to the Common Council for such action by the latter body as is permitted or deemed proper under the terms of the ordinance.

Sec. 6. The Public Lighting Commission shall have the supervision of the construction of all electric light lines of wires erected in pursuance of the authority hereby granted, and all connections made in any public building or buildings, as provided by chapter 13 of the Charter of the City of Detroit. In the lines of wires or the laying of any conduits as herein provided, said Lighting Commission shall prescribe or determine the street or streets in which it shall be lawful to erect or construct lines of wires above ground, and no person shall erect any pole or train any wire for such lines above ground in any street or highway excepting the same be authorized by such permit.

Any person violating the provisions of this section shall be punished by a fine not exceeding five hundred dollars, and in the imposition of such fine the court may make a further sentence that the offender be imprisoned in the Detroit House of Correction until such fine be paid, provided the term of imprisonment shall not exceed the period of six months.

Sec. 7. Any permit hereby authorized shall not become operative and authorize the construction of any line of wires above ground or the laying of any conduits until the person or company to whom the same may be granted shall have filed with the City Controller a satisfactory bond, to be approved by the Controller, in the sum of twenty thousand dollars, conditioned that the person or corporation to whom such permit is granted will faithfully comply with and perform the terms and conditions of this ordinance; and such person or corporation shall also have deposited and shall keep on deposit with the City Treasurer the sum of two hundred dollars to cover the expense of the replacing of the earth in making the repairs to pavements required to be relaid by such person or company under the provision of this ordinance, and as a guarantee for the prompt payment of any bills for such work presented by the Board of Public Works such deposit shall be kept good to the amount of two hundred dollars, and on failure to keep the same good to that amount such permit shall become void.

Sec. 8. In addition to all usual and ordinary taxes and general or special assessments for which any such person, persons or corporation shall be liable, he or it shall annually on the first day of July pay to the City of Detroit, as part of the consideration for the rights herein conferred, the annual sum of one dollar for each pole erected and maintained by it, and also the sum of \$5 per annum for each and every mile of wire operated and maintained by it, computation thereof to be based upon each strand of wire, whether above or below the surface of the ground, said sum to be paid to the City of Detroit for the first year or portion of a year within one month after the construction and erection of such poles, and annually thereafter on the first day of July in each and every year in advance. And the bond mentioned above in section 7 shall be further conditioned for the payment of said sums.

Sec. 9. Whenever the Public Lighting Commission shall deem it for the public interest they may require, as a condition to the issuing of any permit, that the wires shall be laid in the public conduits, and if any wires shall be strung on poles along any highway, and public conduits shall afterwards be laid therein, said commission may require the wires so strung upon poles to be taken down and put in the public conduit; and upon any refusal to do so, may remove the same. Said commission may prescribe the terms and conditions upon which the public conduits shall be used for such purpose.

Sec. 10. Any rights acquired under any such permit shall cease whenever the Common Council shall so direct, and all poles and wires shall thereupon be removed at the expense of the person or corporation erecting or controlling the same.

Sec. 11. When any wires erected under any such permit shall interfere with any wires of the Public Lighting Commission, or with any telephone or telegraph wires of the Fire Commission or of the Police Department, the Public Lighting Commission may direct the removal of the same, or such alterations in relation thereto as will obviate or prevent such interference. When any person or corporation shall have erected a pole on any portion of a street, it shall be subject to the condition that the Public Lighting Commission may authorize other persons to whom such permits may be granted, to use such pole already erected, and upon such terms and conditions as the Public Lighting Commission may direct.

Sec. 12. This ordinance shall take immediate effect.

Approved October 17, 1893.

Lighting System Ordinance.

AN ORDINANCE to protect the Public Lighting System.

It is hereby ordained by the People of the City of Detroit:

Section 1. That no person shall cut, break, injure, deface or destroy any building, engine, boiler, dynamo or other machinery or appliances, poles, lamp posts, towers, wires or conduits erected or constructed for the public lighting system of the city of Detroit.

Sec. 2. No person shall open or tamper with any manholes or handholes or any vault or junction box connected with the conduits of the public lighting system, nor shall any person, association, corporation, or company attempt to place or place any wires in said conduits, or upon the poles of said system without permission in writing from the Public Lighting Commission.

Sec. 3. No person, association, corporation or company shall post, paint, impress or in any way affix to any pole connected with the public lighting system of said city, or any box, lamp post, tower, wire or other appliance connected therewith, any placard, sign, notice or announcement of any kind, or cause or allow any kite or other obstruction to become entangled with the wires, or apparatus of said system.

Sec. 4. Any violation of any provision of this ordinance shall be punished by a fine not exceeding one hundred dollars and costs; and in the imposition of any fine the court may make a further sentence that the offender may be imprisoned in the Detroit House of Correction until the payment thereof, for any period not exceeding six months.

Sec. 5. This ordinance shall take immediate effect.

Approved September 17th, 1895.

Public Building Ordinance.

AN ORDINANCE relating to the lighting of public buildings.

It is hereby ordained by the People of the City of Detroit:

Section 1. That the City Hall, Municipal Court building, all Police Stations, Fire Engine Houses, House of Correction, all public school buildings and all other buildings occupied by any of the several boards or commissions forming part of the government of the City of Detroit be and the same are hereby declared to be public buildings.

Sec. 2. It shall be the duty of the Public Lighting Commission to furnish the electrical current required for the proper lighting of all public buildings. Any electric current supplied by the said commission may be used in said buildings for the driving of ventilating fans or other similar appliances.

Sec. 3. During the remainder of the present fiscal year the expense of furnishing such electrical current shall be paid as heretofore by the Common Council or by the several boards and commissions using the same, but the Public Lighting Commission shall include in their estimates hereafter the expense of such lighting of all public buildings or such of them as the board or commission in charge thereof shall require to be lighted.

Sec. 4. Whenever any new public building shall be constructed it shall be the duty of the board of commission in charge thereof to submit the plans therefor to the Public Lighting Commission, and the said commission shall give such instructions as it may deem proper and necessary to insure the proper and safe wiring of such buildings and to supervise the same.

Approved December 12th, 1895.

An Ordinance to Regulate Electric Wiring and the Use of Electricity.

It is hereby ordained by the People of the City of Detroit:

Section 1. The Public Lighting Commission of the City of Detroit shall assume the supervision of the putting in of all electric wiring, connections and apparatus, in or on any building in the City of Detroit, and shall establish rules and regulations to which all electrical equipments hereafter erected or used within the City of Detroit shall conform.

Sec. 2. The Public Lighting Commission may, with the consent of the Common Council, employ a sufficient number of competent electricians, not exceeding three, as inspectors, whose duty it shall be to examine each electrical equipment hereafter erected and make a detailed report of same to said Commission as to whether it is in compliance with the rules and regulations of the Commission, and a record of all such reports made by said inspectors shall be kept on file in the office of said Commission, and when an equipment is found to conform to the rules and regulations adopted, the said Commission shall issue a certificate in duplicate that the terms of this ordinance have been complied with, but no such certificate shall be granted until the equipment is made to conform to the rules prescribed herein, and it shall be unlawful to use any such electrical equipment or to furnish electrical current or currents for the same until certificate has been furnished in accordance with the terms of this ordinance, and the rules and regulations of said Commission.

Sec. 3. No person, firm or corporation, shall equip any building with wiring or apparatus, or make any alteration of, change in, or addition to any electrical wiring or apparatus, without first notifying the Public Lighting Commission in writing and giving a general description of the work to be done, so that ample opportunity for inspection may be had, and receiving a written permit to do the work described, and such equipment, alteration, change or addition shall be done to the satisfaction of the Public Lighting Commission, who shall issue a certificate in like manner as provided in section two herein.

Sec. 4. The Public Lighting Commission shall have the right and power, and it shall be their duty to cause all electrical wires and apparatus in or on any building in the City of Detroit to be inspected from time to time, in order to ascertain whether the electrical wiring or apparatus is in any respect dangerous to life or property, and if any part of said electric wires or apparatus shall be found dangerous to life or property, the Public Lighting Commission shall notify the owners of the building or equipments to cease using the electric current in such dangerous equipments; to have the defects in said equipments repaired within a reasonable time, not exceeding ten days from date of notice. The Public Lighting Commission shall also give notice to the company furnishing the electric current to any such dangerous equipment to cease to supply the same until the defects therein are repaired, and it shall be the duty of such company, immediately upon receipt of such notice, to cease to supply the electric current to any such dangerous equipment until such defects are repaired.

Sec. 5. When, upon application inspection is made of the wiring or equipment in any building in this city, the company or person installing such equipment shall, before certificate is issued, pay to the Public Lighting Commission, of this city, for such inspection, the following fees:

For 15 lights or less.....	\$ 50
When more than 15 lights, and not more than 25 lights.....	75
When more than 25 lights, and not more than 50 lights.....	1 25
When more than 50 lights, and not more than 100 lights.....	2 00
When more than 100 lights, and not more than 150 lights.....	2 50
When more than 150 lights, and not more than 250 lights.....	4 00
When more than 250 lights, and not more than 500 lights.....	5 00
For each additional light, over 500.....	1 cent each
Miniature incandescent lights, one-half above rates.	

WHEN WIRING IS FOR ARC LIGHTS.

For two lights or less.....	50
When more than two lights—each.....	25

When wiring is done for dynamo, electric machines, whether used for motors or generators:

For one K-W, or less.....	50
When more than one K-W, and not more than three K-W.....	1 00
When more than three K-W, and not more than eight K-W.....	1 50
When more than eight K-W, and not more than fifteen K-W.....	2 00
When more than fifteen K-W, and not more than thirty K-W.....	2 50
When more than thirty K-W, and not more than 60 K-W.....	5 00
When more than sixty K-W.....	8 00

For inspection of electrical apparatus for which no fee is herein prescribed, and for the re-inspection of electrical installations, as provided in section 4, hereof, and for the inspection of temporary installations for decorative, advertising or theatrical purposes, the Public Lighting Commission may prescribe a fee of not exceeding seventy-five cents (75c) per hour, for the time actually consumed by each inspector in making the inspection, and it shall be the duty of the Public Lighting Commission to turn all money received under this ordinance into the Public Lighting fund of the City of Detroit.

When a person, firm or corporation shall be found to have intentionally or negligently violated any of the rules and regulations established by the Public Lighting Commission, under this ordinance, or when through any fault of the person, firm or corporation doing the work, it is necessary to make extra inspection of the work, the Public Lighting Commission shall have the power to charge for such extra inspection, a fee not to exceed seventy-five cents per hour for the time actually consumed by each inspector in making the inspection.

Sec. 6. Any person, firm or corporation who shall do or attempt to do electrical construction work whether original work or alterations without giving notice in writing to the Public Light Commission, and obtaining a permit to do such work, shall upon conviction thereof be fined in the sum of not less than \$20 nor more than \$100 for each offense, and any person, firm or corporation who shall violate any of the provisions of this ordinance, for which a penalty is not herein otherwise provided, and any occupant or owner of premises where electric wiring or apparatus is used or to be used, who shall refuse to allow, or shall prevent or interfere with any inspector in the discharge of his duties under this ordinance, he or they shall upon conviction for each offense, forfeit and pay a fine of not less than \$5.00 nor more than \$100, in the discretion of the court, and in the imposition of any fine or costs, the court may impose a further sentence that the offender be imprisoned in the Detroit House of Correction until the payment thereof, providing that the term of such imprisonment shall not exceed three months.

Sec. 7. This ordinance shall not be construed to relieve from or lessen the responsibility of any party owning, operating, controlling or installing any electrical equipment for damages to anyone injured by any defect therein, nor shall the city be held as assuming any such liability by reason of the inspection authorized herein or certificates issued.

Sec. 8. This ordinance shall take effect upon and after August 1, 1896.

Approved July 28, 1896.

Sections 4 and 5 of this ordinance are given as amended by the Common Council on September 10, 1901, to take immediate effect.

An Ordinance to Regulate Electric Wiring and the Use of Electricity.

It is hereby ordained by the People of the City of Detroit:

Section 1. That the Public Lighting Commission of the City of Detroit shall annually examine wiremen seeking to engage in that vocation (the term wiremen intending to and does hereby designate and refer to those who string, train or place electric wire on the inside of buildings, and not to apply to linemen, or those engaged in stringing, training or placing wire on the outside of buildings or structures), as to their ability to do such electrical work, upon written application for, and who apply in person for examination, and to such as pass said examination to the satisfac--

tion of the Public Lighting Commission, a permit in accordance therewith shall be issued by the said Lighting Commission; said permit shall be issued in the form of a badge, which said badge shall be worn in a conspicuous place on the person of such wireman or electrical worker while he is engaged in doing any manner of electric wiring or while engaged in making repairs to electrical wire or fixtures in any building or structure in said City of Detroit. And it shall be unlawful for any person to engage in doing any manner of electrical wiring or repairs to electric wire or fixtures, in any building without such badge conspicuously displayed on his person while engaged in such work. Any wireman or electrical worker (not including linemen) who fails to conform in every respect to the rules prescribed by this ordinance, or who loans or transfers his badge to another, does thereby revoke his permit, and it shall be the duty of the inspector of the Public Lighting Commission to take up and suspend said person to whom said badge has been issued and report same to the Public Lighting Commission, who shall give said person a hearing, and it shall be optional with the said commission to renew or revoke the said permit until the provisions of this ordinance are complied with.

Sec. 2. It shall be unlawful for any individual, firm or corporation to string or place any bare grounded wire, such as telegraph or telephone wires, on the same pole, stanchion or upright, with high potential wires, without separating said wires carrying high potential currents from said bare grounded wires by a distance of at least eight feet in the clear. And it shall be the duty of any individual, firm or corporation, quasi municipal or otherwise, to remove said bare wires to conform to this ordinance as herein provided, within ninety days from date of service of notice to separate said wires given by the Public Lighting Commission or its duly appointed agent. High potential wires in this ordinance being wires carrying currents of three hundred volts or over.

Sec. 3. It shall be unlawful for any individual, firm or corporation to encase, cover or introduce any wire, carrying electrical current into any iron pipe or any metallic electrical conducting material, affixed to any wooden pole, stanchion or upright, which shall extend nearer than eight feet from the lowest cross-arm on said wooden pole, stanchion or upright; and it shall be unlawful to expose any electrical wire without such insulation in any manner which shall form a connection or circuit with the earth in such manner as to be dangerous or injurious to life or health. This provision not to apply or prevent the encasement of said wires in any non-conducting substance or material such as wood, etc.

Sec. 4. It shall be the duty of any company stringing bare wires wherever said wires cross trolley wires, to provide safe and suitable insulation for all such bare wires at such crossings where in case of breakage said wires would come in contact with the aforesaid trolley wires.

Sec. 5. It shall be the duty of the Public Lighting Commission, upon complaint of any citizen, to examine or cause to be examined any dangerously exposed electrical wires, and to notify the individual, firm or corporation owning or controlling the said exposed wire of its dangerous condition, and to have the same remedied at once, and made safe, and upon the failure of such individual, firm or corporation to remedy and make safe said dangerously exposed wire, it shall be the duty of the said Public Lighting Commission to cause a complaint to be made for a breach of this ordinance and to prosecute the said individual, firm or corporation for such breach; and any refusal or neglect to remedy said dangerously exposed wire, after due and proper notice from the said Lighting Commission, shall subject the individual, firm or corporation owning or controlling the same to a fine or imprisonment.

Sec. 6. All day circuits, excepting street railway circuits, of high potential currents shall be designated by some mark or distinctive insulator upon each wire at each insulator designate the same as such.

Sec. 7. It shall be the duty of any individual, firm or corporation to remove from any building, structure or pole all dead wires, which are not actually in use, within thirty days from notice given by the Public Lighting Commission.

Any breach of this ordinance shall subject the offender to a fine of not exceeding two hundred dollars, or to imprisonment for a period of not exceeding sixty days, and each subsequent breach of this ordinance shall be deemed a separate offense, and shall be so punishable.

Sec. 8. This ordinance shall take immediate effect.

Approved November 1st, 1898.

AN ORDINANCE to regulate the use of wires for telegraph, telephone and electric lighting and all other service wires in the City of Detroit.

It is hereby ordained by the people of the City of Detroit:

Section 1. Any person or corporation may apply to and receive a permit from the Public Lighting Commission, to lay conduits, erect poles and place thereon or therein wires or other conductors for the purpose of furnishing telephone, telegraph and electric lighting or other service wires to any person or persons desiring the same, and within the district to be designated in the application to be made for such permit. Said Public Lighting Commission is hereby authorized to grant such permits for the laying of conduits, erection of poles, placing of wires therein or thereon in the streets, alleys or other public places in the city, subject, however, to the conditions and restrictions imposed by this ordinance and all other general ordinances now in force or which may hereafter be adopted concerning the same.

Sec. 2. The person or corporation, to whom such permit shall be granted, shall do no injury to any street, avenue, alley, lane, park or public square or to any shade trees, or in any manner disturb or interfere with any water or gas pipes or with any public or private sewer now or hereafter laid or constructed by any authorized person, persons or corporations or the wires and conduits of any telephone, telegraph or electric lighting or street railway company or of the Police, Fire, or Lighting Commissions, and shall fully indemnify and save harmless the city of Detroit from any and all claims or damages for which said city might be made or become liable to pay by reason of the construction, maintaining or repairing or operating of said poles, conduits, wires or other conductors, or any apparatus connected therewith or otherwise arising from the use or the possession of the rights and privileges granted or from any neglect on the part of said corporation or person or its or his employees to comply with any of the ordinances of the city of Detroit, and especially shall indemnify the city against and assume all liabilities and damages which may arise, come or occur to the city of Detroit from any injury to persons or property from the doing of any work herein mentioned, or the neglect of any person, or company, or its employees, to comply with any ordinance relative to the use of streets or other public places, especially as to the putting up of lights or barriers at or around excavations and the acceptance by the person, persons or corporations of such permit of this ordinance shall be an agreement by it to pay to the city of Detroit any sum of money for which the city may become liable from or by reason of such injury.

Sec. 3. All poles erected under such permit shall be firmly set in the ground and in streets next to and within the curbstone, so as to cause the least obstruction in such manner, and of such uniform height, size, color and material as shall be approved by the Public Lighting Commission and the Board of Public Works; the number of cross-arms, minimum distances same from the surface of the street, the proximity of different wires to each other, their arrangement, including guy wires, etc., to be approved by the Public Lighting Commission.

Sec. 4. All operating and conducting mains and wires of any such person, persons or corporation shall be thoroughly and securely insulated with a material of sufficient thickness and durability to be not easily abraded or injured mechanically, and impervious to water, where deemed necessary by the Public Lighting Commission, and to be approved by the Public Lighting Commission. All conduits shall be laid in streets and avenues in a line parallel with the curb line thereof at such distance from the curbstone, or where the curbstone should be, as shall be designated by the Board of Public Works, and to a depth to be designated by the Board of Public Works. It is especially required that all service wires used by such person, persons or corporation shall be connected only with a main laid in a conduit in the alley or at the side of the street nearest to the building into which it is desired to conduct such service wires.

Sec. 5. At least twenty-four hours before opening or excavating in any street alley or any public space for the above or for any other purpose, said person, persons or corporation shall notify the Board of Public Works in writing of such desire, stating the place where, and the object for which such opening is to be made, and obtain the permit of said Board, and in the opening and refilling of all openings and excavations made as aforesaid, the relaying of the pavement and other work necessary to the complete restoration of the street, pavement, sidewalks or grounds to equally good condition as when disturbed, the said person, persons or corporation, or its servants

or employes, shall be under the supervision of the Board of Public Works, or its authorized agents, and shall promptly comply with any order or resolution of said Board or its agents, or the Common Council in reference thereto, nor shall any street, avenue or public place be allowed to remain open or incumbered for a longer period than shall be necessary to execute the work for which the same has been opened, and the Board of Public Works, or the Common Council, may determine the question of such necessity.

The earth removed in making such excavation shall be restored and the pavement be relaid by such person, persons or corporation in as good a condition as before the making of such excavation, and thereafter be maintained in as good a condition as the surrounding pavement, until the street or alley in each case is repaved. No excavation in any street, or alley or public place shall be allowed to remain open, or said street, alley or public place be incumbered for a longer period than it shall be necessary to execute the work for which the same is made.

The cost of restoring the earth or other cost arising from such excavations and the relaying of the pavement, and the repairs thereto caused by the opening of any such street, alley or public place shall be at the expense of said person, persons or corporation, and said work shall be done under the supervision of the Board of Public Works, and the expense of such supervision shall be paid by said company on presentation of bills certified by said board, and any expense to which the city shall be put from the neglect of said company or its employes in the doing of any work, or the doing of the same in any unworkmanlike manner, of the digging of ditches or holes and erection of poles, or restoring the earth or any excavation, or relaying or replacing of any pavement, shall be paid in like manner by said company on presentation of the bill of costs certified by said Board of Public Works. And it shall be the duty of said person, persons or corporation in each instance to promptly pay all bills for labor and material, supervision, etc., incurred by the Board of Public Works in relaying and restoring any pavement or surface disturbed by said person, persons or corporation, and if said bills properly certified by the Board of Public Works remain unpaid for the space of thirty (30) days after the presentation to said person, persons or corporation, it shall be the duty of the Board of Public Works to pay over to the credit of the proper fund the amount of any bills so remaining unpaid from the guarantee money deposited by said person, persons or corporation with said Board, and on refusal, neglect or failure by such person, persons or corporation to make such guaranty money good to its full extent as herein first named, prior to the next meeting of the Common Council, the Board of Public Works shall report the facts in the case to the Common Council for such action by the latter body as is permitted or deemed proper under the terms of the ordinance.

Sec. 6. The Public Lighting Commission shall have the supervision of the construction of all lines of wire erected in pursuance of the authority hereby granted, and all connections made with any building or buildings. In the stringing of line of wires or the laying of any conduits as herein provided, said Lighting Commission shall prescribe and determine the street or streets in which it shall be lawful to erect or construct lines of wires above ground and lay conduits in the ground, and no person shall erect any pole or train any wire for such lines above or in the ground in any street, alley or highway, excepting the same be authorized by such permit. Any person violating the provisions of this section shall be punished by a fine not exceeding five hundred dollars, and in the imposition of such fine the court may make a further sentence that the offender be imprisoned in the Detroit House of Correction until such fine be paid; provided, the term of imprisonment shall not exceed the period of six months.

Sec. 7. Any permit hereby authorized shall not become operative and authorize the construction of any line of wires above ground, or the laying of any conduits until the person, persons or corporation to whom the same may be granted, shall have filed with the City Controller a satisfactory bond, to be approved by the Controller, in the sum of twenty-five thousand dollars (\$25,000), conditioned that the person, persons or corporation to whom such permit is granted will faithfully comply with and perform the terms and conditions of this ordinance, and such person or corporation shall also have deposited and shall keep on deposit with the City Treasurer the sum of two hundred dollars (\$200.00), to cover the expense of the replacing of the earth in making the repairs to pavements required to be relaid by such person or company under the provisions of this ordinance, and as a guarantee for the prompt payment of any bills for such work presented by the Board of Public Works. Such deposit shall be kept good to the amount of two hundred dollars, and on failure to keep the same good to that amount, such permit shall become void.

Sec. 8. Whenever the Public Lighting Commission shall deem it for the public interest they may require as a condition to the issuing of any permit that the wires shall be laid in the public conduits, and if any wires shall be strung on poles along any highway and public conduits shall afterwards be laid therein, said commission may require the wires so strung upon poles to be taken down and in their stead suitable wires put in the public conduit, and upon any refusal to do so may remove the same. Said commission may prescribe the terms and conditions upon which the public conduits shall be used for such purpose.

Sec. 9. Any rights acquired under any such permit shall cease whenever the Common Council shall so direct, and all poles and wires shall thereupon be removed at the expense of the person, persons or corporation erecting or controlling the same.

Sec. 10. When any wires erected under any such permit shall interfere with any wires of the Public Lighting Commission, or with any telephone or telegraph wires of the Fire Commission or of the Police Department or other public service wires, the Public Lighting Commission may direct the removal of the same, or such alterations in relation thereto as will obviate or prevent such interference. When any person or corporation shall have erected a pole on any portion of the street or alley it shall be subject to the conditions that the Public Lighting Commission may authorize other persons or corporations to whom such permits may be granted to use such pole already erected and upon such terms and conditions as the Public Lighting Commission may direct.

The Public Lighting Commission may require that all poles shall be used to their maximum capacity and the lines thereon so distributed as to obtain such result. The Public Lighting Commission may require any person, persons or corporation occupying a certain right of way with line or lines of poles of insufficient capacity to accommodate the requirements of that locality to replace said poles with such other poles as may be approved by the Public Lighting Commission.

Approved December 3d, 1900.

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